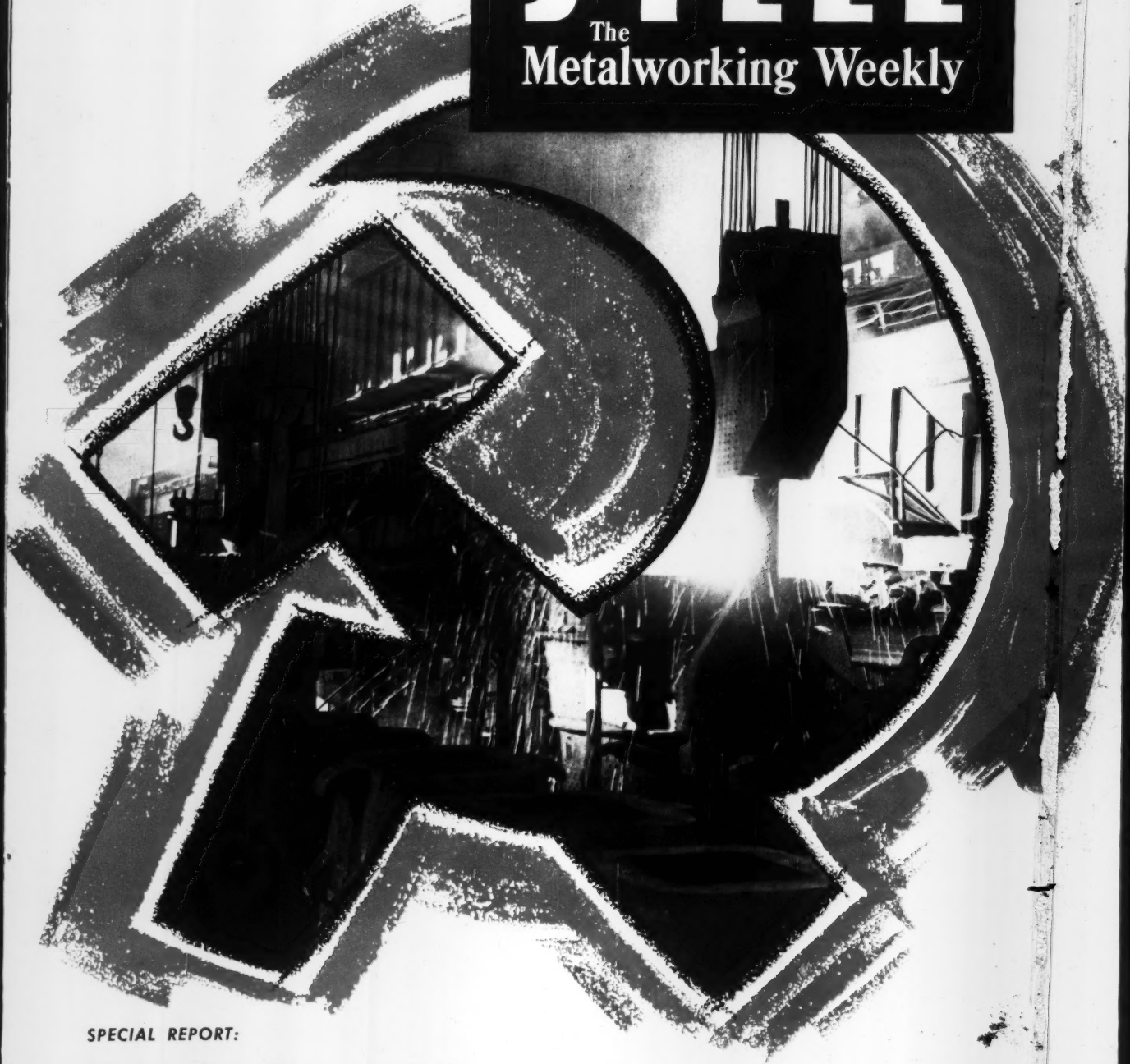
SEPTEMBER 8, 1958

STEEL
The Metalworking Weekly



SPECIAL REPORT:

Soviets Expand Steel in Race with U. S.

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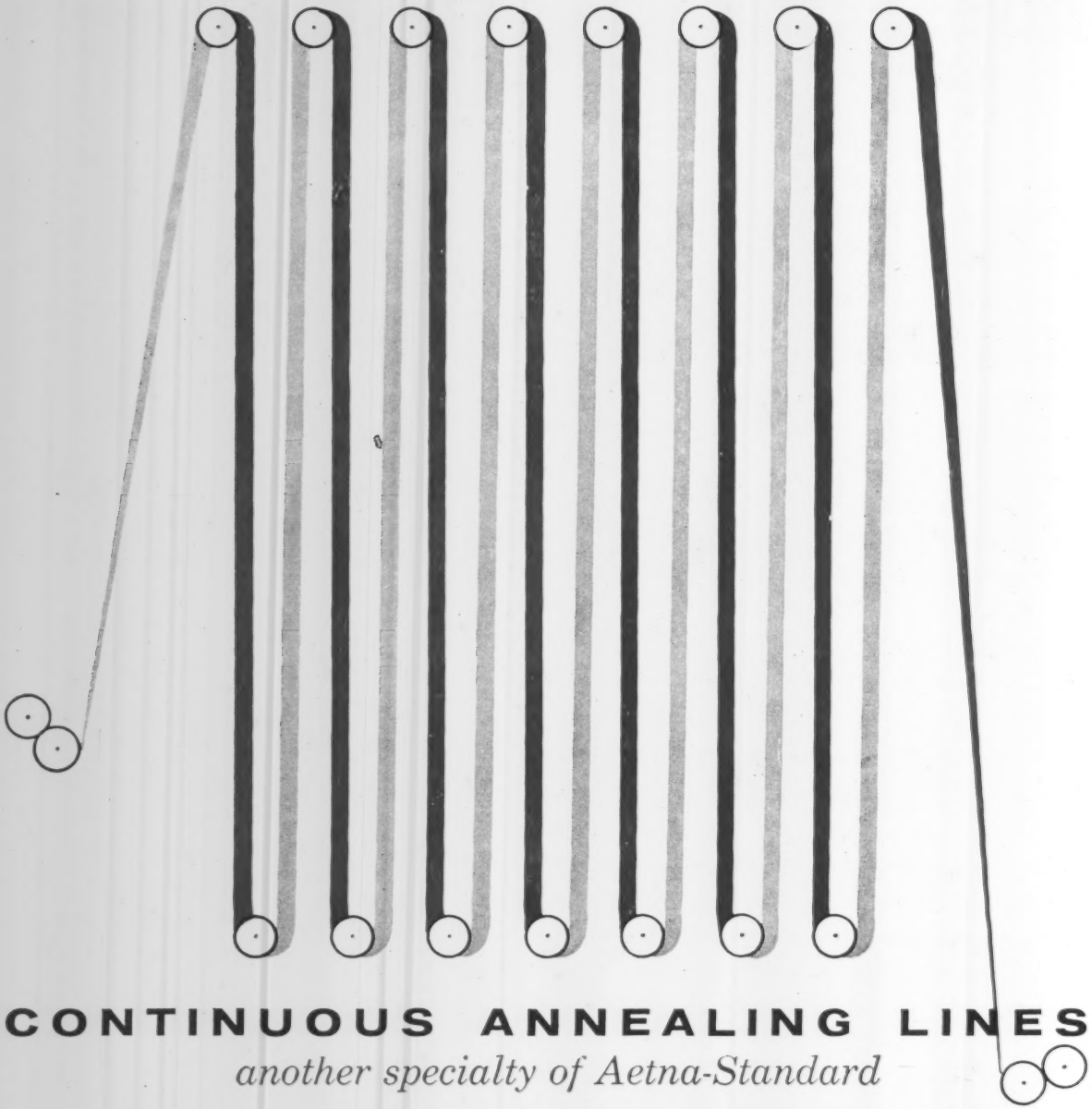


CONTINUOUS ANNEALING LINES

another specialty of Aetna-Standard

Like Continuous Galvanizing or Tinning, a Continuous Annealing Line requires good designing and rugged equipment.

Aetna has much experience in continuous processing lines, galvanizing, tinning and annealing. In fact, Aetna pioneered in continuous equipment. Two of the most recent high speed Aetna lines incorporate many new ideas and innovations, permitting sure tracking at high speeds of 1,000 feet and more.

What can Continuous Annealing do for your production and your costs? Aetna's sales engineers can produce some interesting figures.

AETNA • STANDARD

THE AETNA - STANDARD ENGINEERING COMPANY

GENERAL OFFICES: PITTSBURGH, PA. • PLANTS: ELLWOOD CITY, PA., WARREN, OHIO • RESEARCH LABORATORY: AKRON, OHIO

CONTINUOUS GALVANIZING LINES • CONTINUOUS ANNEALING LINES • CONTINUOUS ELECTROLYTIC TINNING LINES • SIDE TRIMMING AND SHEAR LINES AND OTHER FINISHING EQUIPMENT • CONTINUOUS BUTT WELD PIPE MILLS • SEAMLESS TUBE MILLS • DRAWBENCHES AND OTHER COLD DRAW EQUIPMENT • ROLLS AND CASTINGS • EXTRUDERS, MILLS, PRESSES FOR RUBBER, PLASTIC AND CHEMICAL

Tool Steel Topics

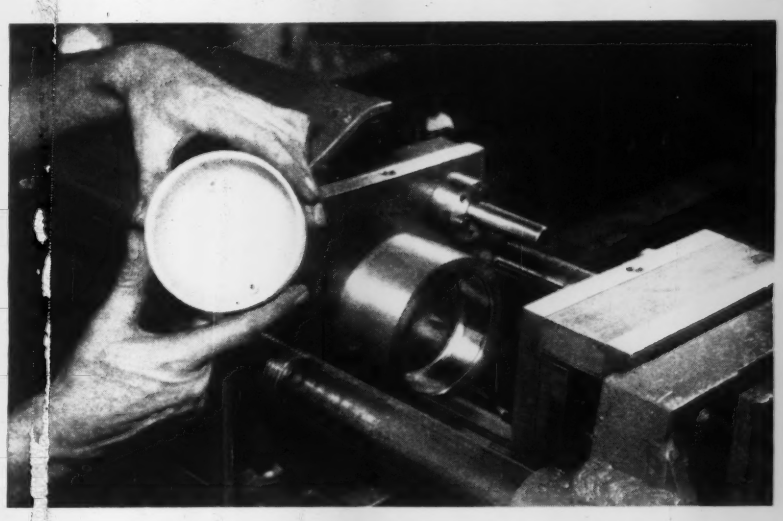
BETHLEHEM STEEL

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

Lustre-Die held costs down in molding plastic covers



"We need," said the customer, "a plastic cover to protect our sealed motors. It's to be drip-proof and sturdy, yet must be a low cost item. Do you have a grade of die steel which will help us produce such a cover economically?"

The mold maker, Dollins Tool & Gage Co., Independence, Mo., put the problem up to Ford Steel Co., St. Louis, our local tool steel distributor. Quick as a flash came their recommendation: "Lustre-Die!"

The electric-furnace steel performed to everyone's satisfaction. It was economical. It took a high polish. It had high compressive strength. It machined easily. It performed well in molding the parts which were held to a close tolerance of .001 in.

Lustre-Die is just the ticket for molding plastics because its properties make possible a bright, mirror-like polish. Lustre-Die has the proper basic analysis for molding plastics. And it offers something more — alloy fortification! Lustre-Die is heat-treated by oil-quenching and tempering to augment its properties, and is furnished ready for machining and polishing.

Lustre-Die is carefully inspected to insure cleanliness. It is free from injurious porosity or surface pitting. And there's no problem about inclusion-causing additions.

Lustre-Die is a good steel to keep in mind for your next plastic-molding operation. Your Bethlehem tool steel distributor can furnish it from stock. Why not give him a call?

BETHLEHEM TOOL STEEL ENGINEER SAYS:

Here's Why Air-Hardening Steels are Good Performers

When a large group of various types of tools made from air-hardening tool steels is compared with a group of similar tools made from steels which require liquid quenching for hardening, it will be found that the air-hardened tools outperform the liquid-quenched tools in service. This result will not necessarily be found in the comparison of individual tools, but will appear if a large enough variety and number of tools are studied.

The reason why air-hardened tools outperform liquid-quenched tools can be summed up in one word — consistency. The consistent performance of air-hardened tools is evident in many ways:

DIMENSIONAL STABILITY

All tools, when subjected to the hardening operation, develop small but measurable dimensional changes (so-called distortion). Air-hardened tools not only show less dimensional change than liquid-quenched tools, but the changes that do occur are remarkably similar in each tool when identical tools are made up. By contrast, liquid-hardened tools show considerably more variation from tool to tool when identical tools are produced.

HARDNESS

Duplicate air-hardened tools invariably show the same hardness after heat-treatment. Liquid-quenched tools may show erratic hardness in various locations on a tool, due to variations in effectiveness of the liquid quench; however, duplicate tools will each have a somewhat different hardness pattern.

RESIDUAL QUENCHING STRESSES

All tools develop residual internal stresses due to the hardening operation. Liquid-quenched tools develop high internal residual stresses because of the variations in cooling rate which occur in different locations on a tool during the quench. If improperly controlled, these stresses can lead to cracking of the tools in heat-treatment or in grinding, or the load-carrying ability of the tools may be low and erratic.

By contrast, air-hardened tools develop only a low degree of internal stress during hardening, because of the comparatively uniform cooling in the quench. Furthermore, the degree of internal stress which develops is uniform from tool to tool, so that the service performance of duplicate tools is reasonably consistent.

The advantages of air-hardening steels cannot be realized, however, unless they are hardened by air-quenching. It is possible to harden all air-hardening steels by liquid-quenching (oil-quench or salt-quench as in martempering) and this is frequently done because of the convenience of existing heat-treatment equipment. However, liquid-quenching of air-hardening steels is a serious mistake, because it sacrifices almost all the basic advantages of air-hardening steels. Liquid-quenching not only increases distortion and internal stresses, but may lead to cracking of some of the tools during heat-treatment. Air-hardened steels which are properly quenched in air do not crack in heat-treatment.

Bethlehem offers a full range of air-hardening steels: Bearcat for shock applications, A-H5 for general-purpose tool and die work, and Lehigh H for maximum production runs.

Take a new look at

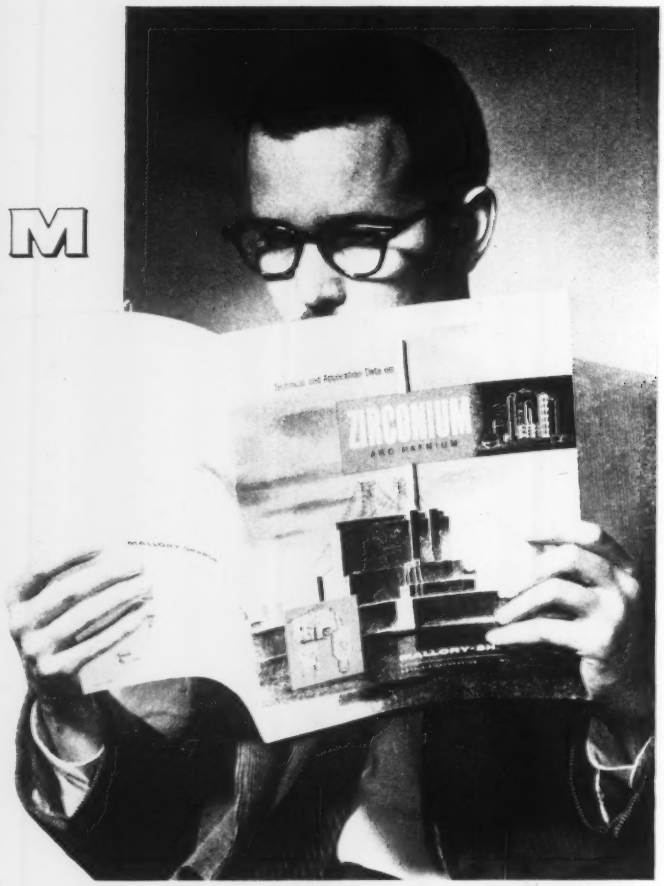
ZIRCONIUM

Now zirconium takes another giant step . . . from an expensive rarity to a readily available special-purpose metal. Capacity is now on hand for not only A.E.C. requirements but also commercial markets. And, as in titanium, Mallory-Sharon is in the forefront of this rapid development.

A modern, highly efficient zirconium and titanium sponge plant at Ashtabula, Ohio, now makes Mallory-Sharon the largest single source of metallic zirconium, and its by-product, hafnium.

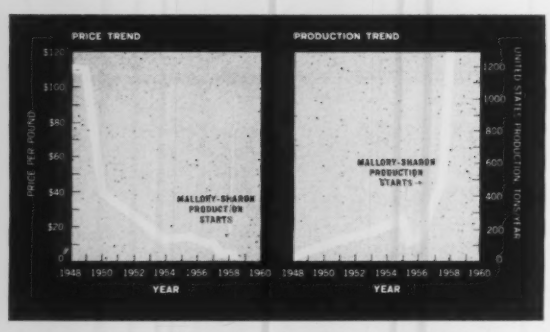
Mallory-Sharon's integrated production facilities . . . from raw materials through finished mill products . . . mean *greater availability* and *lower costs.*

We're ready *now* to help you explore practical commercial uses for zirconium. Write us for technical information, or engineering assistance on specific applications.

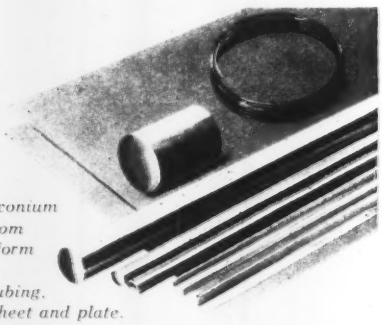


For technical facts — *Write for new 16-page booklet, giving technical and application data on zirconium . . . its excellent corrosion resistance to most acids, alkalies and combinations of these media . . its remarkable nuclear properties*

For availability — *As Mallory-Sharon's large, modern, sponge plant reaches full production this year, zirconium becomes readily available for all commercial applications.*



For lower prices — *Greater availability will definitely be reflected in lower prices. In many cases, the improved performance of zirconium parts much more than offsets their higher material cost.*

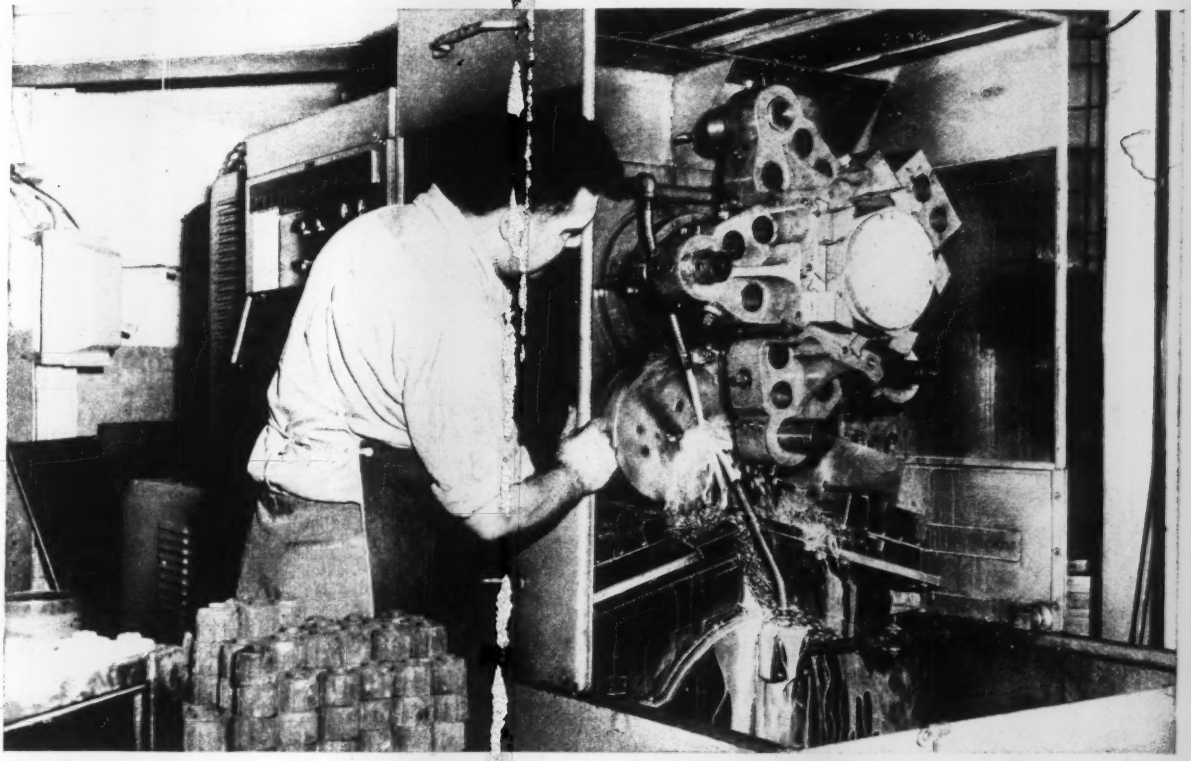


For mill products — *Zirconium is now available from Mallory-Sharon in the form of rounds, bars and billets, wire, tubing, strip, foil, sheet and plate. Quality and properties are carefully controlled at every stage of production*

MALLORY SHARON

MALLORY-SHARON METALS CORPORATION · NILES, OHIO

Integrated producer of Titanium • Zirconium • Special Metals



If this isn't the world's best investment—what is?

HIGHLY PRODUCTIVE machine tools have long been recognized as one of the best investments any metalworking company can make.

And when a standard-designed machine tool pays for itself in less than a year, it's an investment that's hard to beat!

Two Warner & Swasey 2 AC Automatics did just that for The Thew Shovel Company, Lorain, Ohio. They turned in cost savings from 47% to 77% machining 38 different cast and forged steel parts for Lorain power shovels and cranes. Annual dollar savings exceeded the cost of both machines plus tooling!

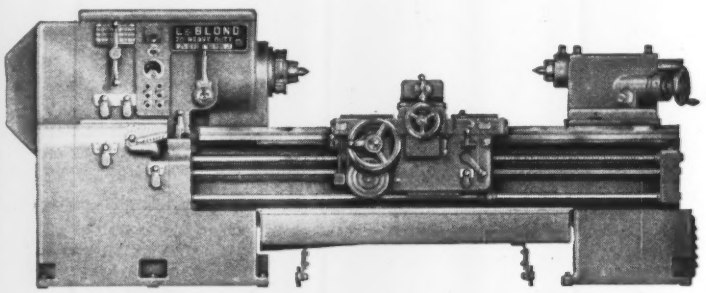
Lot sizes averaged about 200 pieces, ranging from 36 to 2,000—demonstrating the fast setup features of these Warner & Swasey Automatics. Their simplicity of operation permits grouping machines so each 2 AC operator can also handle second operation work on adjacent turret lathes—an additional saving not included in the figures above.

On many jobs in your own plant—some you may think of as strictly "turret lathe jobs"—Warner & Swasey Single Spindle Automatics can speed production, cut floor-to-floor time, and slash machining costs. Our Field Representative will be glad to show you exactly how!

WARNER & SWASEY
Cleveland
PRECISION MACHINERY SINCE 1880

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS . . . WITH A WARNER & SWASEY

THE RIGIDEST LATHES IN EVERY CLASS YOU'LL FIND IN THE LINE OF LeBLOND



This is the LeBlond 20″ heavy duty lathe. Basically a 40 HP machine, it was modified to test tools for tomorrow—150 HP at speeds in excess of 10,000 sfm. The basic rigidity was there all the time—the margin of engineering excellence that is traditionally LeBlond. Write for your LeBlond Complete Line Catalog No. C-58.

THE R. K. LeBLOND MACHINE TOOL CO. CINCINNATI 8, OHIO

World's Largest Builder of A Complete Line of Lathes for More Than 71 Years

This Week in STEEL The Metalworking Weekly

September 8, 1958
Vol. 143 No. 10

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Don't be fooled into thinking that Russia's industrial expansion and production goals are unattainable.

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WARD STEEL CO.

We specialize in
FINISHED STEEL
BARS—TUBES—STRIP

PROMPT WAREHOUSE SERVICE ONLY

Most Complete Stock in America of
BLUE TEMPERED SPRING STEEL

We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.

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Branch:
3042-3058 W. 51st Street, CHICAGO, ILL.
Phone: Grovehill 6-2600

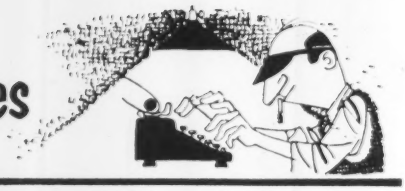
IF

METALWORKING PLANTS

ARE YOUR PROSPECTS

STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment — Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, Ohio.

behind the scenes



Russian Report

"We can't finding our way to Smolensk,
Said the pilot, "the fog is too densk.
"But we won't be the first
To have missed it by versts.
Mother Russia, you know, is immensk."

Editor-in-Chief Irwin H. Such has good reason to know how immensk Russia is. Early this year Irwin went to the land of the Soviet as a member of an official delegation of the American Iron & Steel Institute. The Muscovites sent the group winging from Moscow to Siberia to the Black Sea and spread before their astonished eyes a vast array of steelmaking facilities. When he wasn't eating such assorted delicacies as caviar, apples, cucumbers, and black bread, Irwin was taking notes, joining in toasts, and searching bathrooms for sink stoppers.

"They don't seem to care about sink stoppers at all," he reported with pardonable amazement. "I just couldn't understand it."

Fortunately for the metalworking world in general, and readers of STEEL in particular, Irwin didn't permit his curiosity about the sink stopper shortage to get the better of him. He concentrated on the subject of Russian iron and steel and eventually prepared an 8-page report, which begins on Page 85.

Personally, we would like to pursue the plug business. Maybe we could understand the Russian mind better if we knew why the comrades insist on unplugged wash basins. Of course, the answer might be devastating, like the one given to a medical missionary by a poor, filthy woman in a wretched Indian village. He asked her why she refused to wash her baby in a basin provided for that express purpose by a charitable group of Baptist ladies from Terre Haute, Ind. "Doctor sahib must be nuts," said the lady, absently adjusting the ring in her nostril. "As baby is washed, water grows dirty. You want I should rinse my kid in dirty water?"

Labor Pains

There's a sort of a tizzy going on in the ranks of the steelworkers, and STEEL reports its angles and consequences beginning on Page 45. Some union malcontents are not too happy with the leadership of wavy-haired President McDonald.

The McDonald faction, of course, contends that whatever the late president Phil Murray could do, McDonald can do as well.

Whatever affects steelworkers affects metalworking, so STEEL's investigation, examination, and analysis of the turmoil within the union ranks become required reading. A timid steelworker who felt a compulsion to appear before a Senate investigation committee lost his nerve, and appeared before Shrdlu instead. Tuning up his balalaika (we started out this week with a Russian theme, so we may as well remain consistent) he then began to sing:

There's confusion in the ranks
Of the union boys tonight,
In the union where McDonald's
Curly ringlets shone so bright.
Yes, some sturdy, steelu minions,
Unimpressed by mien or coif,
Seem to favor a pronouncement
That begins with, "Mac, be off!"

Three Cheers & a Tiger

We don't often single out striking ads in STEEL because it's difficult to mention one and ignore all the others. However, on Pages 18 and 19, Aug. 25 issue, the Morse Twist Drill & Machine Co., New Bedford, Mass., a division of Van Norman Industries Inc., ran a spread that excited even our advertising salesmen. The message, in letters as large as aardvark tracks, hit you right in the eye: "GUTS, NOT CUTS—that's what business needs right now!" To our notion, this was one of the most startling and inspiring advertisements ever published in a business paper. It's also the first time we ever saw the word "guts" in 156 point type. We bow respectfully three times toward the Morse Twist Drill & Machine Co. and compliment them on their splendid spread.

A Webster Gambit

We've had requests for word games again, so let's be off. A certain six-letter word is associated with the beginning of life and the end of life. Taking its letters in order, each is also the first letter of six other words. Its first letter, for example, is also the first letter of a word meaning unrefined; second, first letter of a word meaning an alcoholic drink before a meal; third, first letter of a word meaning an Indian macaque; fourth, first letter of a word meaning a conflict; fifth, first letter of a word meaning blunt; the sixth letter is also the first letter of a word meaning to seize suddenly.

Those are made purposely simple. Next time we may use a metallurgical dictionary and crib some definitions that will put you into orbit.

Shrdlu

(Metalworking Outlook—Page 39)

All 3 performance benefits you want most from your air compressor lubricant...

LOW UPKEEP • PEAK LUBRICATION • FIRESAFETY AT LOWEST COST WITH PYDRAUL AC LUBRICANT

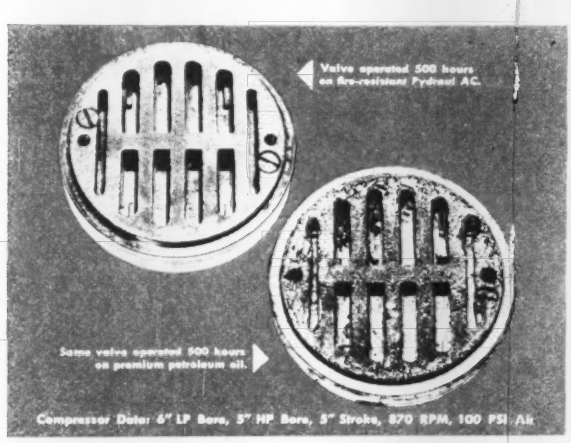
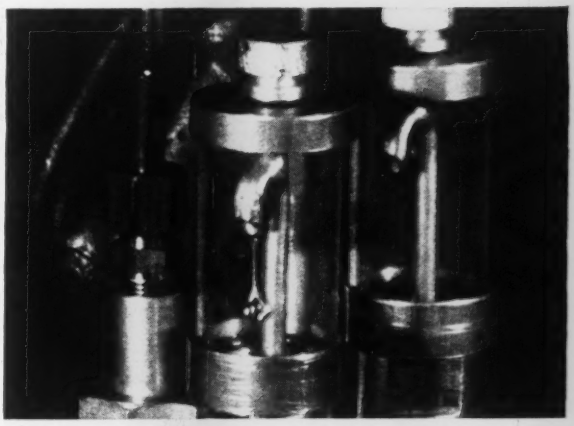
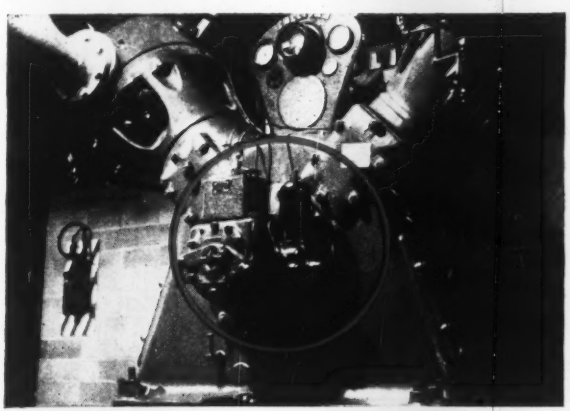

Valve operated 500 hours on fire-resistant Pydraul AC.
Same valve operated 500 hours on premium petroleum oil.
Compressor Data: 6" LP Bore, 5" HP Bore, 5" Stroke, 870 RPM, 100 PSI Air

Photo proof: Pydraul AC runs cleaner—can substantially cut your air compressor upkeep costs because it reduces build-up of carbon and other deposits—extends operating time between overhauls. Side-by-side photos (above) of an exhaust valve—operated in the same industrial air compressor with only the lubricant changed—shows how Pydraul AC keeps air compressor systems freer from harmful and dangerous deposits than a premium petroleum oil. Lower maintenance costs alone usually justify your use of Pydraul AC.



Pydraul AC lubricates like premium-grade oil—good anti-wear qualities and noncorrosive features give your equipment longer life. And Pydraul AC is the one lubricant for virtually every air compressor you own—has demonstrated its excellent lubricating efficiency in hundreds of compressors of all types and sizes produced by all of the major compressor manufacturers—has operated without trouble or replacement for periods up to 5 years. Now, Pydraul AC is effectively lubricating air compressors operating at over 4500 psi. Many compressors have operated continually with exhaust air temperatures of 340° F.



Firesafe Pydraul AC gives 2-way protection in this danger zone. Residue from lubricants deposits inside compressor cylinders, valves and piping throughout the system—glows hot and flakes off—can unpredictably ignite flammable vapors from hot petroleum-based lubricants causing fire...explosion! Monsanto's synthetic lubricant, Pydraul AC, essentially eliminates this basic cause of most air compressor fires and explosions in 2 ways: it lessens carbon deposits and oxidation residues, and it is a *fire-resistant* lubricant.

ONLY PYDRAUL AC gives you *at lowest cost* all 3 performance benefits you want most from your air compressor lubricant: low upkeep, firesafety, peak lubrication. Write Monsanto for *your* free trial sample.

PYDRAUL—Monsanto T.M., Reg. U.S. Pat. Off.

SEND COUPON FOR MORE DETAILS

Monsanto Chemical Company
Organic Chemicals Division
Dept. S-1, St. Louis 24, Mo.

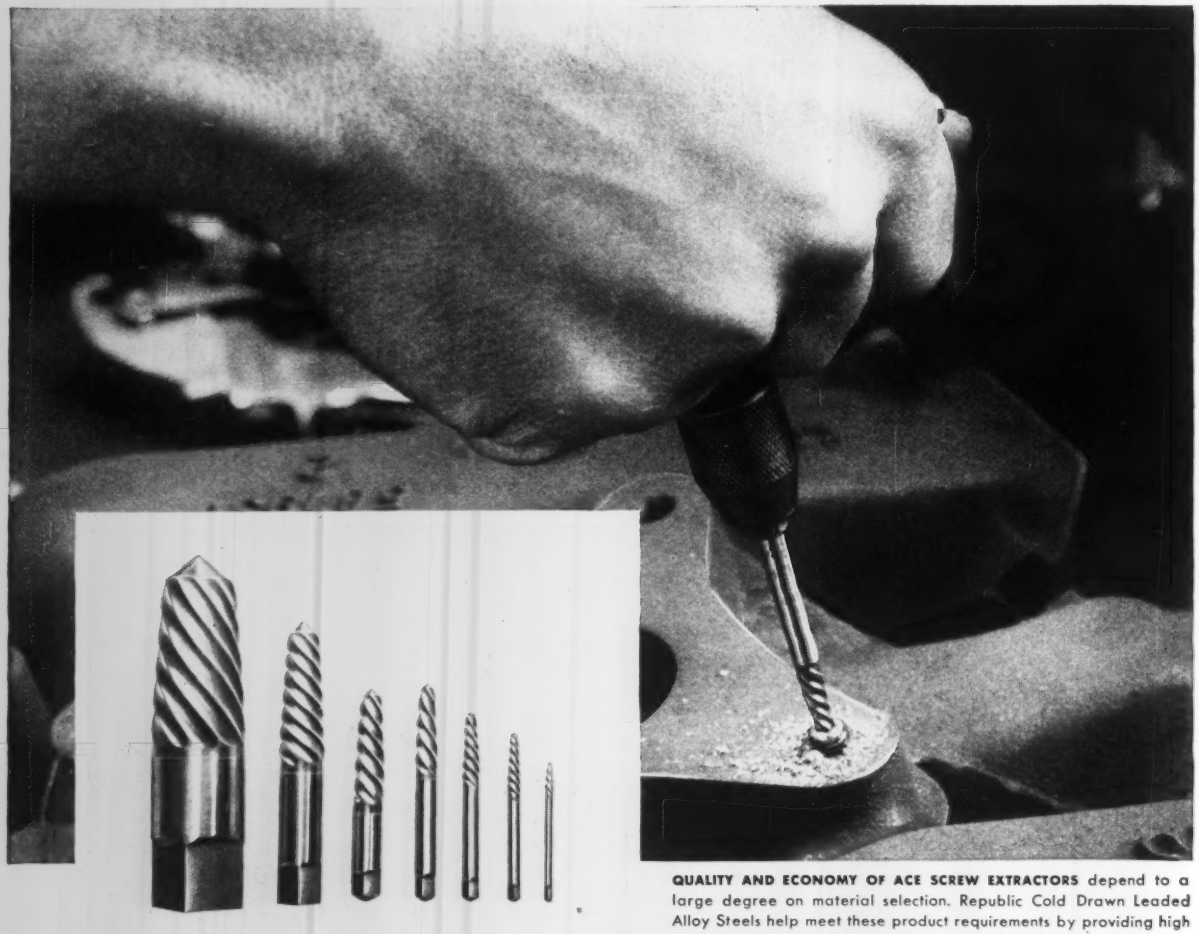
Please send me the new 16-page booklet on fire-resistant Pydraul AC lubricant for air compressors.

Name .....

Company .....

Address .....

City ..... *Zone* ..... *State* .....



QUALITY AND ECONOMY OF ACE SCREW EXTRACTORS depend to a large degree on material selection. Republic Cold Drawn Leaded Alloy Steels help meet these product requirements by providing high hardenability and toughness, plus good formability.

REPUBLIC COLD DRAWN LEADED ALLOY STEEL IMPROVES PRODUCTION AND PERFORMANCE

of Ace Screw Extractors

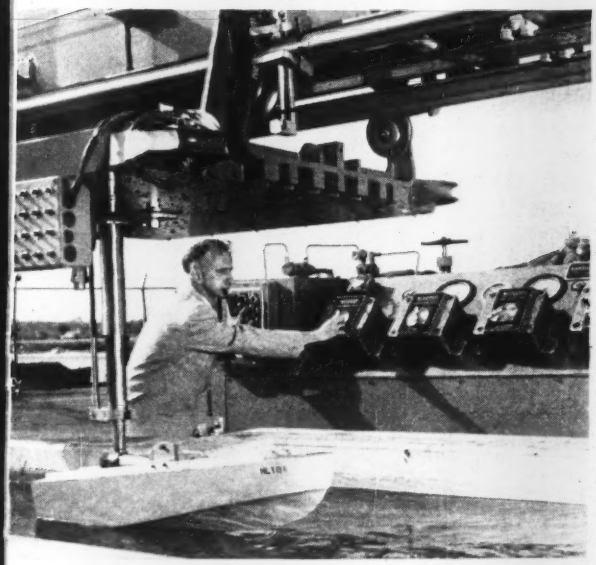
Use of Republic Cold Drawn Leaded Alloy Steel for Ace Screw Extractors helps the Henry L. Hanson Company, Worcester, Massachusetts, secure an ideal combination of production and performance advantages.

First, rolling of the extractor spirals used to require several passes, each followed by an annealing operation. Now, with Republic Leaded Alloy, separate passes can be made deeper. Result is a substantial reduction in the total number of steps. Moreover, since cold drawing improves the machinability of any given analysis, savings in machining costs are secured.

Next, in-service demands on Ace Screw Extractors require a high degree of hardness and toughness. The two Republic Alloys used (4140 and 4150) provide these properties with margins to spare. With scientific heat treatment, the finished extractors are practically unbreakable.

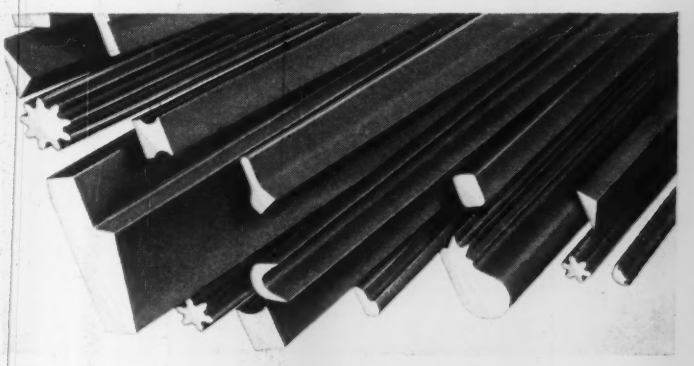
Republic Cold Finished Alloy Steels are available in every standard analysis, plus many specials, to give you the best combination of chemical and mechanical properties to suit virtually any application. Republic Metallurgists will be glad to work with you in developing still other types as required.

It will pay you to get complete information on all of the advantages offered by Republic Cold Finished Alloy Steels. Simply contact your nearest Republic office or mail coupon.



TOUGH PERFORMANCE SPECIFICATIONS make Republic Cold Finished ENDURO® Stainless Steel Bars ideal for this high-speed hull testing device. Hull models are suspended from a carriage which rolls on Republic Stainless Steel Bars. High tensile strength, close tolerance, and a fine surface finish provide smooth, precise operation of the testing device. Excellent service life is assured by ENDURO'S high resistance to corrosion, wear, and abrasion. Send coupon for further information on Cold Finished ENDURO Bars.

BRUTAL PUNISHMENT IMPOSED ON PULPSTONE STUDS during manufacturing and service is the reason why the Norton Company, Worcester, Massachusetts, specifies Republic Cold Drawn Steel Bars as basic material. Production requires a rugged combination of heavy roll-threading and machining. Completed studs are used to anchor abrasive segments to pulpstones. Pulp grinding operations impose very heavy loads on each stud. The excellent machinability, formability, and strength characteristics of Republic Cold Drawn Steel helps Norton meet all of these requirements with performance margins to spare. Moreover, finished stud cost is far less than previous minimums. Send coupon for facts.



INCREASED PRODUCTION, LOWER COSTS, IMPROVED QUALITY can be gained in parts produced from Republic Cold Drawn Special Sections. Because they are formed to the predominating cross-section of the part, special sections eliminate or greatly reduce required machining. Results are faster output and lower cost. Also, since cold drawing improves the physical properties of any given analysis, completed parts are stronger and longer wearing. Other advantages may include improved appearance and simplified design. For further information, mail coupon.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. S1-5913
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send more information on these Republic Cold Finished Steel Bars:

☐ Alloys ☐ Leaded Alloys ☐ ENDURO Stainless Steel
☐ Carbon Steel ☐ Special Sections

Name_____ Title_____
Company_____
Address_____
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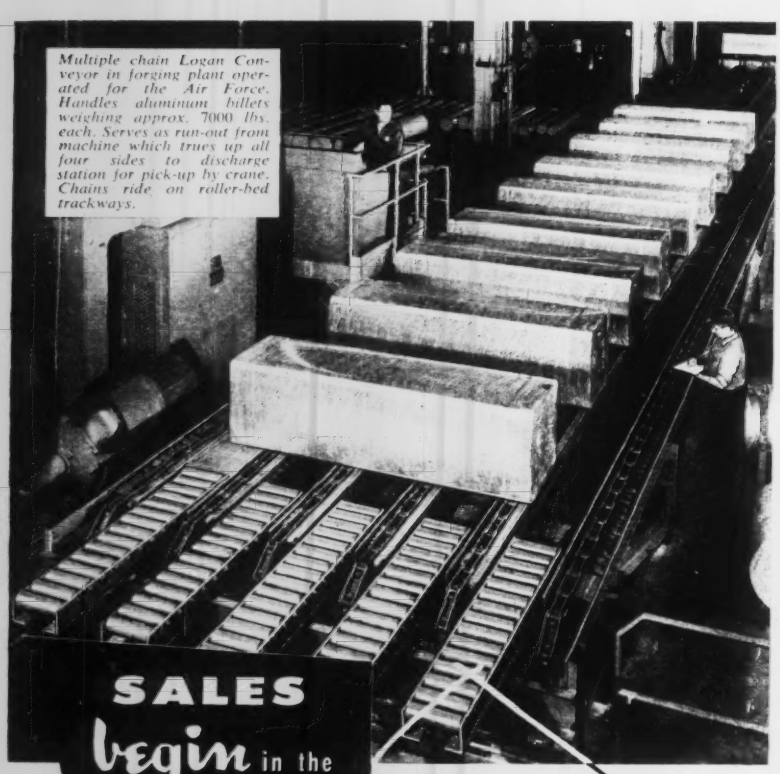


Multiple chain Logan Conveyor in forging plant operated for the Air Force. Handles aluminum billets weighing approx. 7000 lbs. each. Serves as run-out from machine which trues up all four sides to discharge station for pick-up by crane. Chains ride on roller-bed trackways.

SALES *begin* in the **SHOP**

GROWING competition for sales has produced among other benefits, an all-out effort to curb waste. Waste, whether measured in materials, labor, time or space, is a luxury that today's business can ill afford. Losses in these areas often can be reduced or even eliminated by more efficient materials handling—with a favorable effect on price and sales volume.

Logan Conveyors have been employed by successful companies for nearly a half century in solving materials handling problems. Logan's expert engineering staff is ready to help you, too.

For more information or an engineer's call write to—

LOGAN CO., 535 CABEL ST., LOUISVILLE 6, KY.

Logan Conveyors

LETTERS TO THE EDITORS

Impressed with Series

I have read with enthusiasm your 1958 Program for Management articles and have been much impressed with them. Please send reprints of articles No. 1 through 7 and the three remaining articles, as published.

Thank you for your efforts in this management field and for your co-operation in sending extra copies to interested parties such as myself.

Walt Engelund
Sales Manager
Southern California Pipe & Steel Co.
Los Angeles

Read in Customer's Office

While in a customer's office the other day, I read the article, "Coatings Help Metals Beat Heat" (July 28, Page 66). I would appreciate a copy.

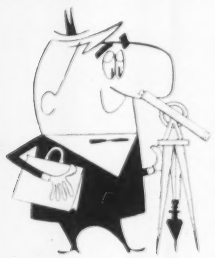
Elmer T. Erb
Commercial Heat Treating
Souderton, Pa.

Inspiration to Sales Staff

Please send a copy of your article, "Needed: Hard-Time Selling" (Aug. 11, Page 32). I found this of great interest, and it should be inspiring to our sales staff.

Mitchell J. Sepanski
Sales Manager
Ability Supply Co.
Chicago

Surveying To Get Facts



Please forward two copies of your excellent Program for Management article, "Surveying the Market" (Aug. 18, Page 85).

J. L. Hallman
Manager
Commercial Research & Promotion
Alan Wood Steel Co.
Conshohocken, Pa.

Query on Research Groups

I recently read your Feb. 24 article, "Licensing: A Road to Profit" (Page 46). Will you kindly let me know the names and addresses of all the research organizations you may have available?

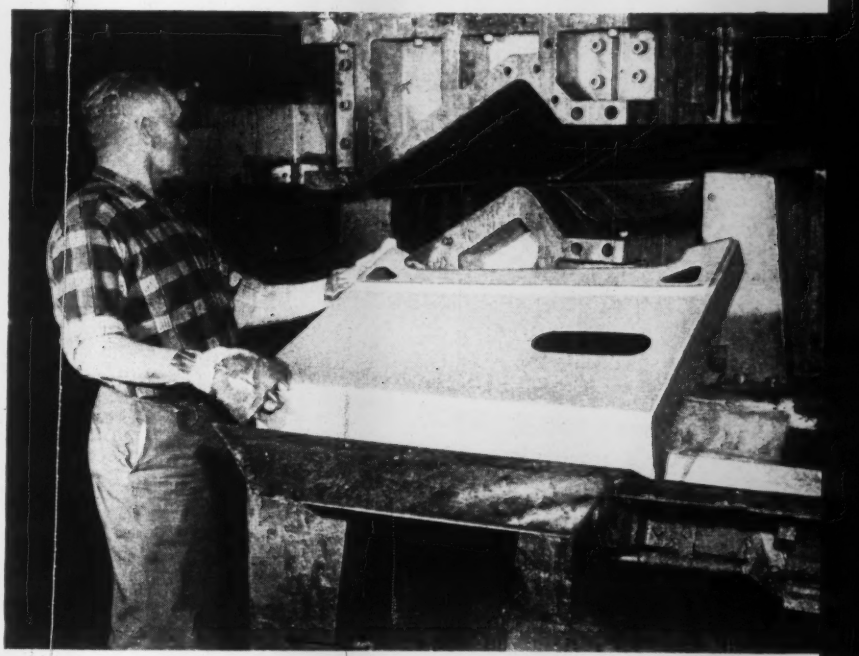
M. W. Seitz
Daffin Mfg. Co.
Lancaster, Pa.

• *Several thousand laboratories, both private institutions as well as those connected*

(Please turn to Page 12)

Accent on excellence

Youngstown enameling sheets



This press operator at Youngstown Metal Products Company—veteran producer of drawn stampings and fabricated parts for leading metal products manufacturers—is busy at work drawing tops for a well-known household washer-dryer combination.

He likes to work with Youngstown Enameling Sheets because they draw easily and due to their high metallurgical quality—provide continuous high-production runs of even the most difficult-to-form parts.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

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YOUNGSTOWN
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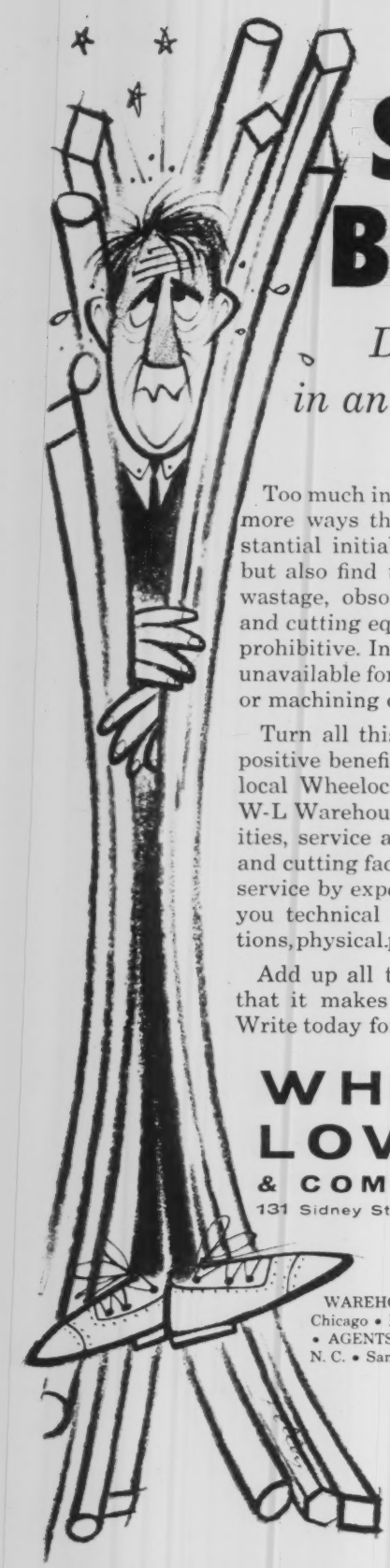
Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio



STEEL BUYERS

Don't get caught in an Inventory Squeeze!

Too much inventory can really jam you up, in more ways than one. You not only incur substantial initial costs that tie up your capital, but also find that the costs piled up by scrap, wastage, obsolescence, maintenance, handling and cutting equipment, taxes and insurance are prohibitive. In addition, valuable floor space is unavailable for other uses, such as heat-treating or machining operations.

Turn all this around, and you see the many positive benefits made available to you by your local Wheelock-Lovejoy Steel Service Center. W-L Warehouse Service offers complete facilities, service and stocks . . . complete handling and cutting facilities . . . fast delivery . . . personal service by expert W-L metallurgists who'll give you technical information on grades, applications, physical properties, tests, heat treating, etc.

Add up all the advantages, and you'll agree that it makes good sense to deal with W-L. Write today for Wheelock-Lovejoy Data Sheets.

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WAREHOUSE SERVICE – Cambridge • Cleveland • Chicago • Hillside, N. J. • Detroit • Buffalo • Cincinnati • AGENTS – Southern Engineering Company, Charlotte, N. C. • Sanderson-Newbould, Ltd., Montreal & Toronto.

LETTERS

(Concluded from Page 10)

with corporations, are listed in the Directory of Industrial Research Laboratories. *Its publisher: National Academy of Sciences, National Research Council, Washington, D. C.*

Problem Solving in Infancy

In your issue of June 30 on Page 60, you have an excellent article, on operations research, "Stalemated? Try This Move." I would appreciate two copies.

I feel that problem solving through operations research is only in its infancy. Although we have utilized these techniques in some small way to date, I think that the future provides unlimited opportunities for developments of this type.

W. L. Zoller
United States Steel Corp.
Pittsburgh

Interesting, Informative Story

Your article, "Warm Heading Tackles Tough Metals" (July 21, Page 114), was interesting as well as informative. We would like 15 reprints.

Irving M. Akins
Advertising Manager
Waterbury Farrel Foundry & Machine Co.
Division of Textron Inc.
Waterbury, Conn.

• • •

May we please have four copies?

John J. Morrissey
General Manager
General Drop Forge Corp.
Buffalo

Training Specialist Wants Copy

I was much interested in your article in the July 7 issue, "More Apprentice Programs Needed" (Page 46). May I have a copy?

K. E. Prillaman
Specialist
Cost Improvement & Training Programs
Industry Control Dept.
General Electric Co.
Roanoke, Va.

• • •

I have read this with interest and would appreciate two copies.

Harold Alper
Counsellor at Law
1068 Springfield Ave.
Irvington, N. J.

One of Finest on Subject

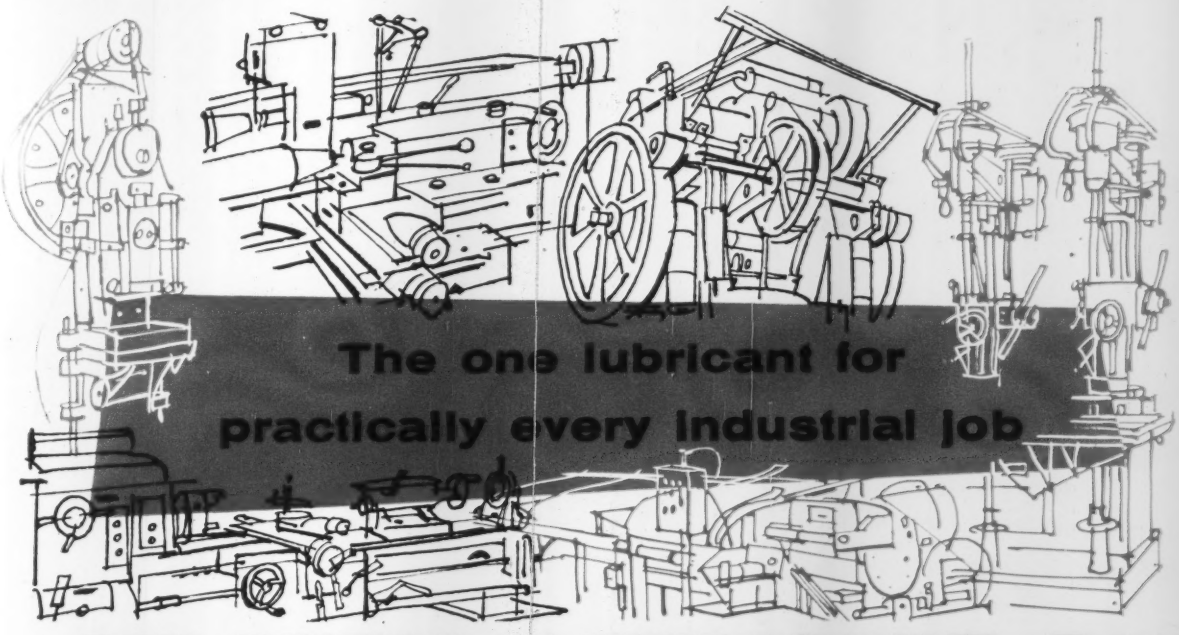
Your article, "Pricing for Profit" (June 16, Page 87), is one of the finest I have read on this subject. We would be grateful for two copies for circulation in our management group.

Louis E. Harrod
Winchester Electronics Inc.
Norwalk, Conn.

• • •

A reprint of this excellent article would be much appreciated.

Jack L. Ziercher
Manager of Market Research
Harbison-Walker Refractories Co.
Pittsburgh



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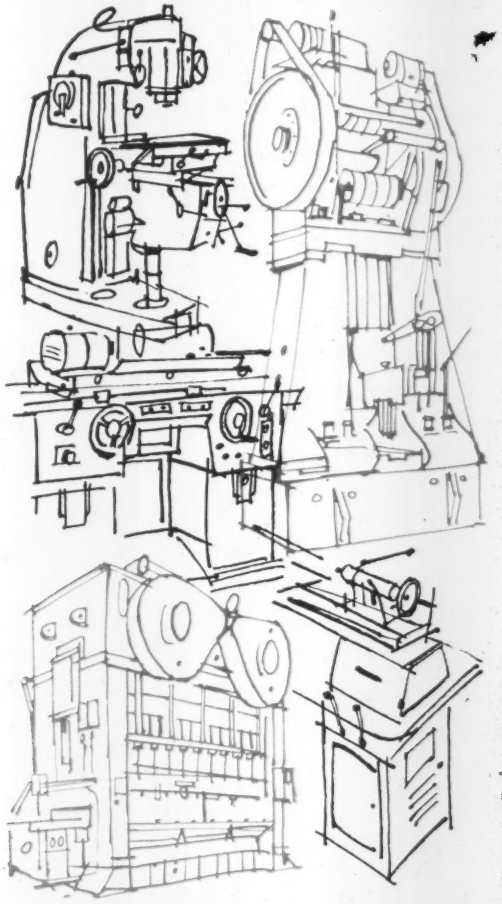

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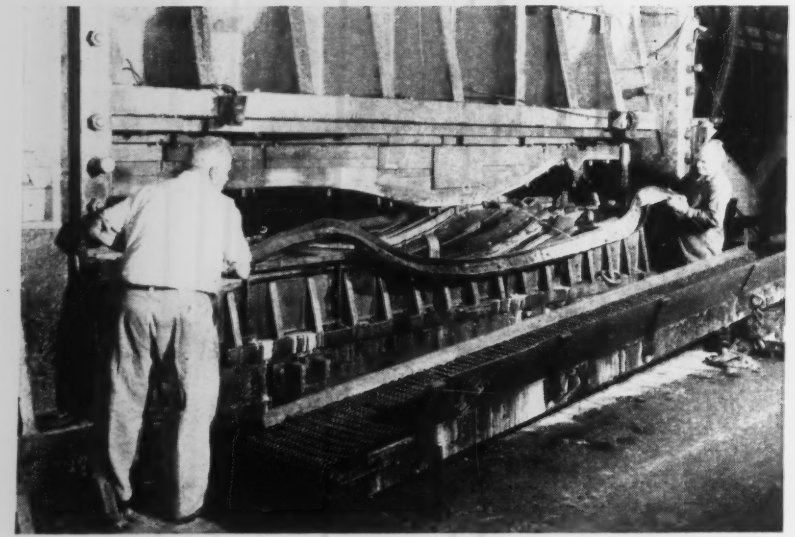
Atlantic Refining Company of Brazil, Rio de Janeiro

Twelve different types of frames for one automaker alone are fabricated from Pittsburgh Steel Company sheet in the Detroit Division of Dana Corporation. Here completed frames are moving to the paint shop.

Pittsburgh Steel sheet helps auto designers improve cars



Steel strip begins to look like the side-rail of an automobile frame. This big forming press forms the blank into half a side-rail section.

Improvements In Frames Demand Better And Better Steel

Formability of sheet steel is speeding production for a large manufacturer of auto frames.

At Dana Corporation's Detroit Division, where as many as 4,000 frames can be made in a single day, a unique forming operation has been developed which requires a high degree of this quality called formability.

Known as edgewise bending, the operation would be impossible without hot rolled sheet steel of top quality—like that supplied Dana Corporation by Pittsburgh Steel Company. Because sheet from Pittsburgh Steel has great formability it undergoes severe deformation without rippling, tearing or peeling.

This kind of formability is important to sheet users every-

where who process steel into finished products.

At Dana, cut lengths of sheet are sheared into strips which measure approximately 205 inches long for one standard type of auto frame. These blanks move through a specially-designed edgewise bending machine which holds each strip perfectly flat while pushing part of the strip against one edge. At the same time that two sections of the strip are being pushed edgewise a total of 13 inches, the remainder of the strip is held motionless and straight.

• **Kick-ups in Frames.** The result is two curved sections, one near each end of the strip. These curves give the finished frame the "kick-ups" over the wheels which allow modern cars to hug the road.

Edgewise bending replaced a process which required taking a much larger piece of steel and cutting out the desired curved shape, cookie-cutter fashion, with a high scrap yield.

Only the best sheet steel will take edgewise bending with the steel flowing smoothly into new shapes. That happens when steelmakers achieve just the right degree of formability while keeping steel's inherent toughness.

Consider what has happened in the making of auto frames alone to see how the automotive industry's demands resulted in better sheet steel.

Only five years ago, one of the best known makes of cars had only three standard frames. Now it has twelve. In the intervening years, frames have become 50 percent stronger. They're now made with more severe bends. They're wider and made of steel 40 percent thicker on the average. "Kick-ups" have become higher and higher.

• **Rigid Specifications.** Specifications for physical characteristics and grain structure became more rigid as frames underwent an increasing amount of shearing, punching, die and press work and welding.

Ever since Pittsburgh Steel Company entered the sheet market, its hot and cold rolled sheet has kept pace with the demands for steel that could take more and more deformation.

Whatever your use for sheet, you can benefit from the skilled know-how that has constantly improved the quality of Pittsburgh Steel sheet.

You'll benefit from increased formability that gives you faster, smoother production with fewer rejects. You'll gain, too, from steel of increased toughness. Start benefiting today by calling the nearest Pittsburgh Steel Company district sales office.

Edgewise bending of sheet steel strips is a unique operation at Dana. This machine pushes each strip into a curved section by holding part of it firm while pushing against the edges of other sections.

After edgewise bending, the steel strips are curved at each end. These curves will provide the "kick-ups" which are necessary for extra room over each wheel.

Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pa.

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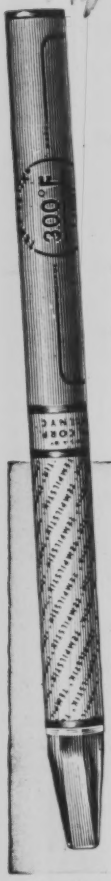

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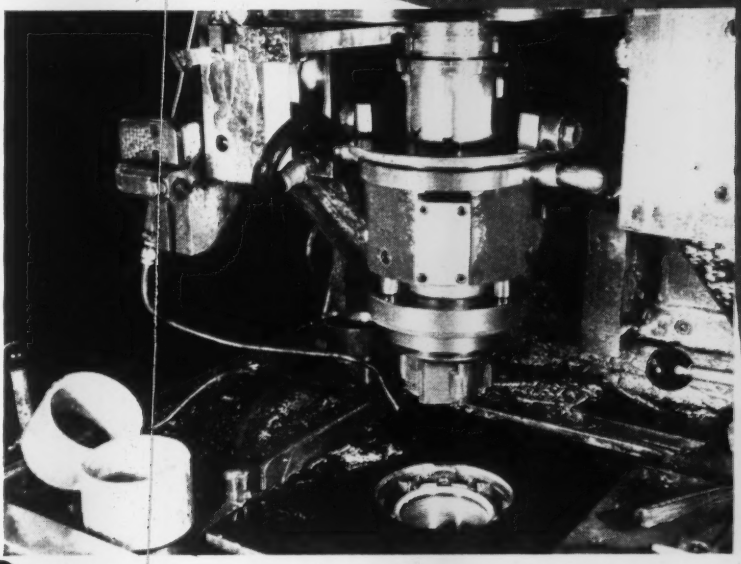

LANDIS TAP threads couplings 2½" - 6" dia.

The wide range of the LANDIS Tap resulting from its detachable-head design makes it an extremely versatile and effective threading tool. At the National Supply Co. in Etna, Penna., one LANDIS 4LL Tap is used for tapping many different diameters of straight and tapered threads in standard and A. P. I. line pipe couplings.

In the operation shown, this Tap on a Vertical Tapping Machine is threading conduit couplings of 4" galvanized H-40 Seamless Tube stock. 4.4191" pitch diameter Straight Pipe threads, 8-pitch, are tapped 3½" long straight through. 50 pieces are threaded per hour at a speed of 41 surface-feet-per-minute, and 400 pieces are completed between chaser grinds.

The detachable-head design of LANDIS Taps allows the use of various sizes of tap heads on the same tap body. As a result, a wide range of diameters may be threaded with a minimum tool investment. The 4LL Tap illustrated here, for example, using 7 different Tap Heads, will thread all coupling sizes from 2½" to 6".

When producing tapered threads, the LL Tap features a mechanical receding action of the chasers. This reduces cutting strains by restricting cutting action to the chaser throat section and results in a precision conical thread.

For more complete information on LANDIS ALT Taps for straight threads, LANDIS LL Taps for tapered threads, and many other LANDIS Taps for special-purpose threading, write for Bulletins G-94 and G-95.

439

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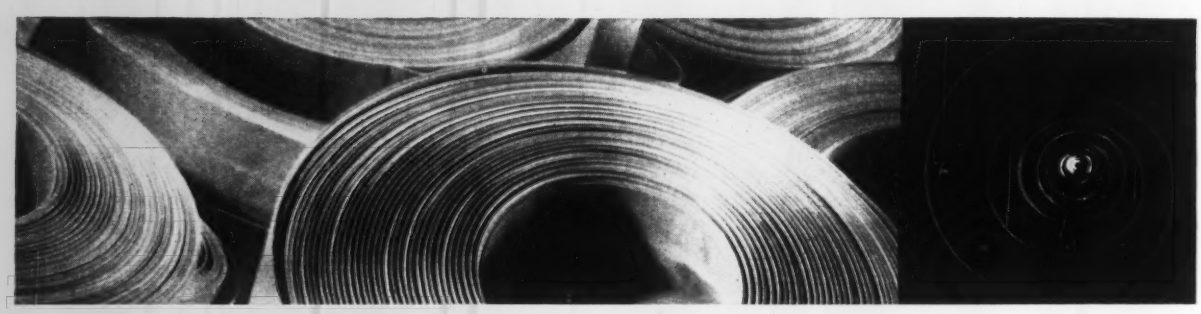

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Wallace Barnes Cold-rolled Specialty Steels

Furnished in these carbon grades:

1.25 – 1.32% .90 – 1.05% .70 – .80% .59 – .74% .48 – .55%

ANNEALED AND HARD-ROLLED

Thickness

.003 – .010″	in widths	1/8 to 6 1/4″	
.011 – .014″	“ “	3/16 to 11″	
.015 – .019″	“ “	3/16 to 13″	
.020 – .035″	“ “	1/4 to 13″	
.036 – .049″	in widths	3/8 to 13″	
.050 – .064″	“ “	1/2 to 13″	
.065 – .093″	“ “	3/4 to 6 1/4″	
.093 – .125″	“ “	3/4 to 6 1/4″	

HARDENED AND TEMPERED

Scale-free or scaleless; polished*; polished and blued*; polished and strawed*

Thickness

.003 – .004″	in widths	1/8 to 2″	
.005 – .007″	“ “	1/8 to 3″	
.008 – .009″	“ “	1/8 to 4″	
.010 – .014″	“ “	3/16 to 5″	
.015 – .019″	“ “	3/16 to 7″	
.020 – .025″	“ “	1/4 to 8 1/2″	
.026 – .030″	“ “	1/4 to 8″	
.031 – .035″	in widths	1/4 to 7″	
.036 – .040″	“ “	3/8 to 7″	
.041 – .049″	“ “	3/8 to 6″	
.050 – .060″	“ “	1/2 to 4″	
.061 – .064″	“ “	1/2 to 3″	
.065 – .093″	“ “	3/4 to 3″	

*Maximum width for polishing in .010 – .030 thickness ranges is 5 in.

Facilities for processing alloy steels also are available.

Standard sizes normally available for prompt shipments.

Write for a copy of “Physical Property Charts” that give performance characteristics of .90 – 1.05% and .70 – .80% carbon grades.

Wallace Barnes Steel Division

Bristol, Connecticut

Associated Spring Corporation

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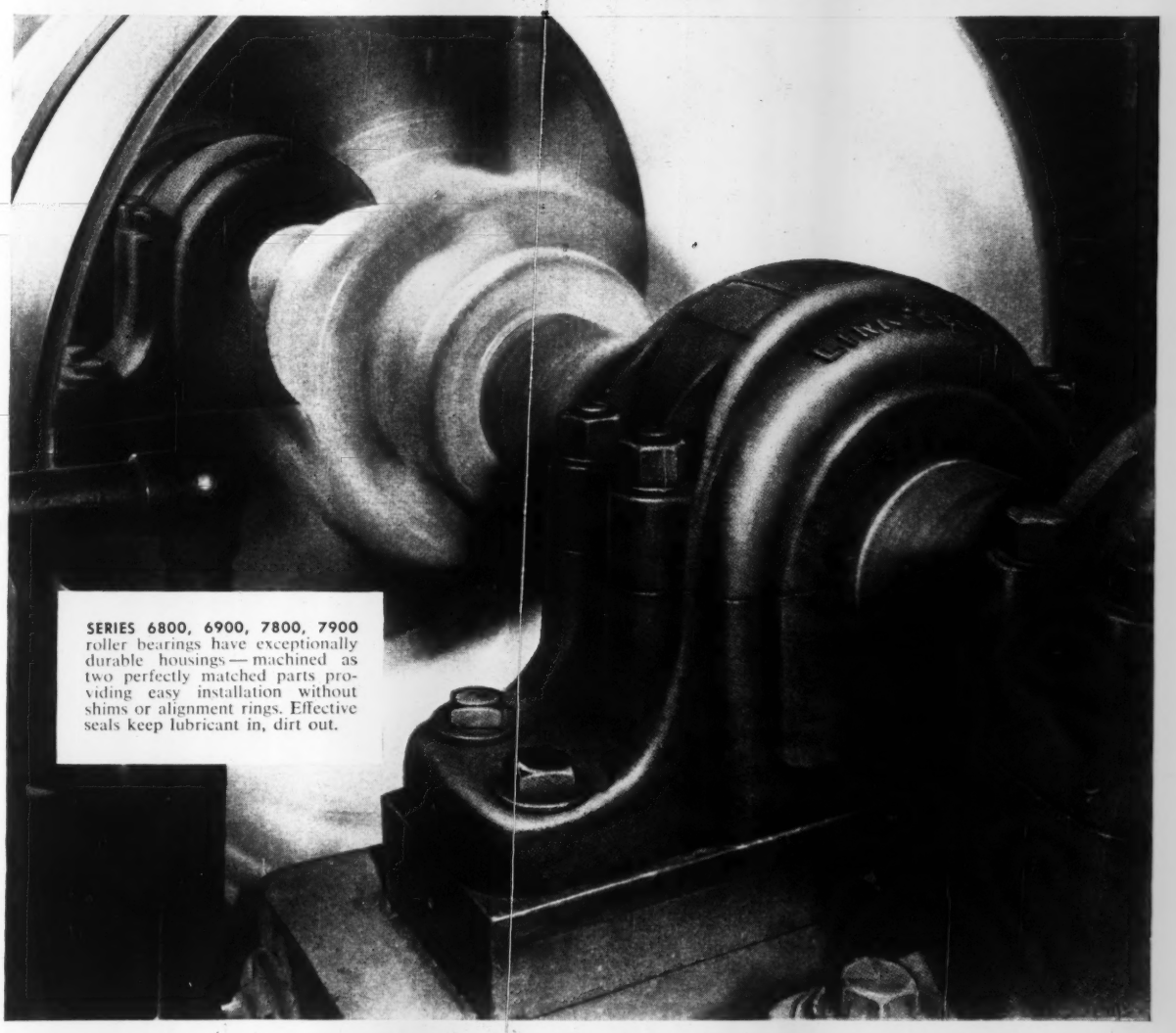
NO PINCH, NO BIND-- ALWAYS-ALIGNED



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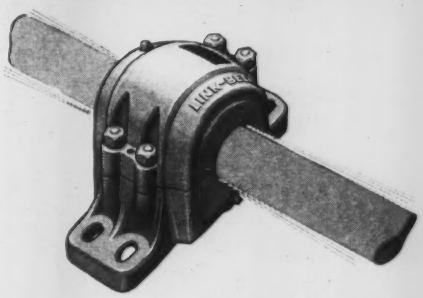
These husky bearings in husky housings adjust *instantly* to shaft misalignment

Shaft deflection often means quick failure for ordinary bearings . . . but not for these rugged Link-Belt *self-aligning* bearings. Adjusting immediately in any direction, they easily compensate for misalignment . . . avoid damaging "pinch" and bind.

You can get full information on Link-Belt's complete bearing line from any one of 40 Link-Belt offices. Or contact your authorized stock-carrying distributor.



Spherical bearings are free to align in any direction, assuring full load capacity regardless of shaft deflection.

LINK-BELT

MANUFACTURERS OF SELF-ALIGNING BALL AND ROLLER BEARINGS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 14,905

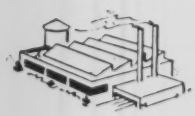
These Rust-Oleum differences

SAVE TIME, MONEY, METAL!

Here are just a few of the many Rust-Oleum differences that save *time, money, metal*—and help to make present equipment last longer.

Saves money—because the Rust-Oleum 769 Damp-Proof Red Primer goes right over sound rusted surfaces after wirebrushing rust scale and loose rust away—usually eliminating costly surface preparation. So easy to use that one man often does the work of two. *Saves money, too*—because Rust-Oleum provides approximately 30% more coverage than most ordinary materials, depending upon the condition and porosity of the surface. *Saves metal*—because Rust-Oleum's specially-processed fish oil vehicle penetrates rust to bare metal, driving out the air and moisture. Attractive Rust-Oleum finish coatings provide lasting beauty in the color of your choice.

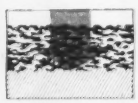
See *proof* of performance with your own Rust-Oleum Test Sample. See its smooth, self-leveling action . . . see how you can save rusted metal and beautify as you protect. Your letterhead attached to the coupon on the opposite page will bring your FREE Test Sample. We want you to try it yourself under your own rust-producing conditions. One brushful tells more than a thousand words.



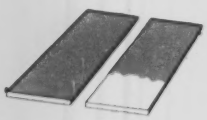
PROVED THROUGHOUT INDUSTRY FOR OVER THIRTY-FIVE YEARS

AVAILABLE IN PRACTICALLY ALL COLORS

EASILY APPLIED BY BRUSH, SPRAY, OR DIP



PENETRATES RUST TO BARE METAL



UP TO 30% GREATER COVERAGE

ONE MAN OFTEN DOES THE WORK OF TWO

STRETCH MAINTENANCE BUDGETS SEASON-TO-SEASON

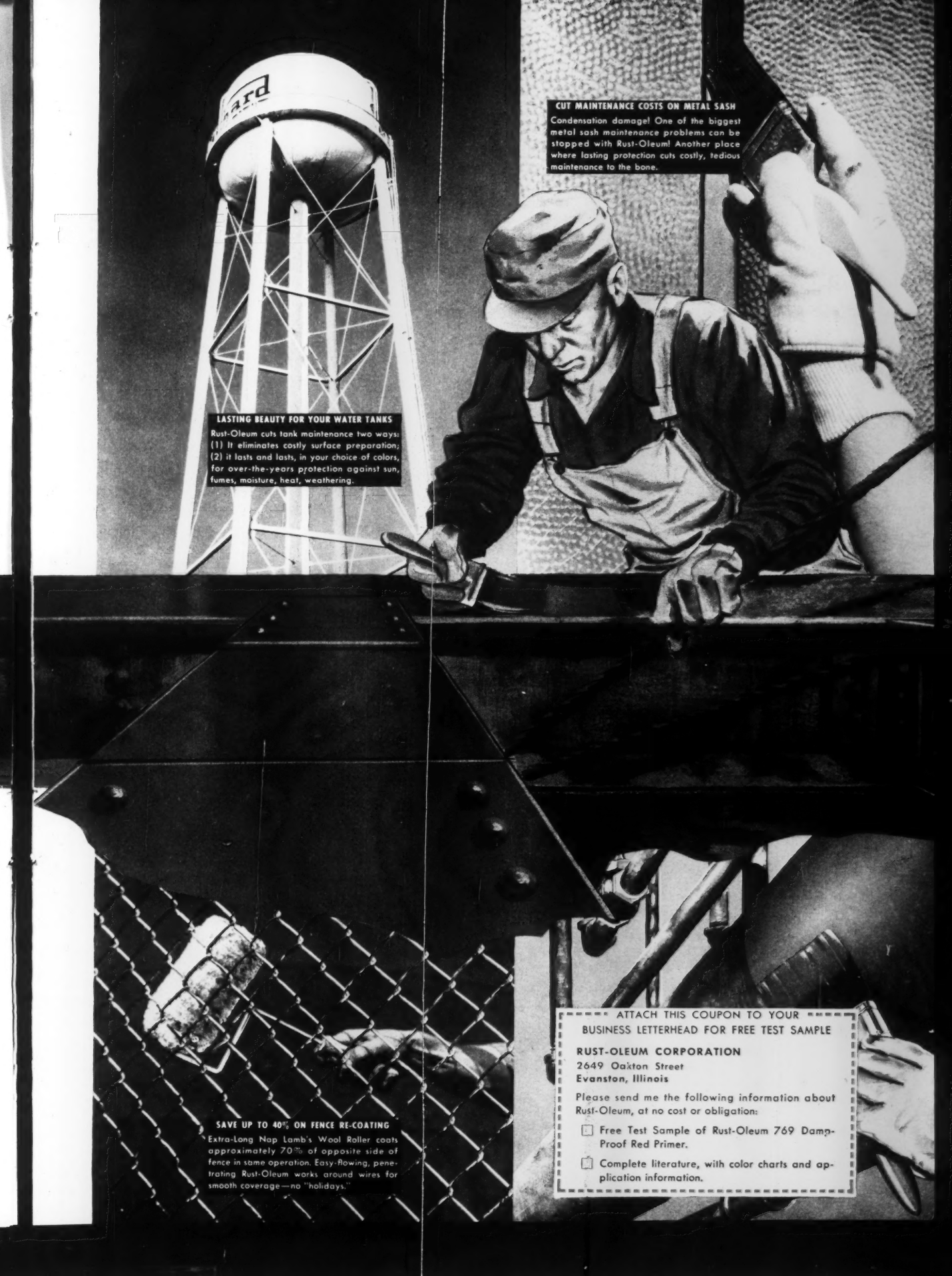
UTILIZES SPECIALLY-PROCESSED FISH OIL VEHICLE

RUST-OLEUM®

Distinctive as your own fingerprint. Accept no substitute.

STOPS RUST!®

Prompt delivery from Industrial Distributor stocks.



LASTING BEAUTY FOR YOUR WATER TANKS

Rust-Oleum cuts tank maintenance two ways: (1) It eliminates costly surface preparation; (2) it lasts and lasts, in your choice of colors, for over-the-years protection against sun, fumes, moisture, heat, weathering.

CUT MAINTENANCE COSTS ON METAL SASH

Condensation damage! One of the biggest metal sash maintenance problems can be stopped with Rust-Oleum! Another place where lasting protection cuts costly, tedious maintenance to the bone.

SAVE UP TO 40% ON FENCE RE-COATING

Extra-Long Nap Lamb's Wool Roller coats approximately 70% of opposite side of fence in same operation. Easy-flowing, penetrating Rust-Oleum works around wires for smooth coverage—no "holidays."

ATTACH THIS COUPON TO YOUR BUSINESS LETTERHEAD FOR FREE TEST SAMPLE

RUST-OLEUM CORPORATION
2649 Oakton Street
Evanston, Illinois

Please send me the following information about Rust-Oleum, at no cost or obligation:

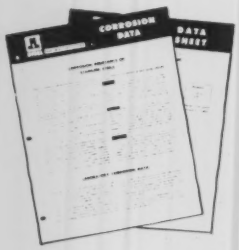
- ☐ Free Test Sample of Rust-Oleum 769 Damp-Proof Red Primer.
- ☐ Complete literature, with color charts and application information.

New Sendzimir Mill

produces stainless steel sheets to extremely close tolerances in widths up to 48 inches

This new Sendzimir mill, complete with annealing, pickling, skin pass and other equipment, was designed and engineered for the exclusive production of the highest quality stainless sheet and strip.

It is located at the Louisville, O., plant of J & L's Stainless and Strip Division. For complete information on the Division's flat rolled stainless products, write our Detroit sales office today.



Write for these Technical Data:
1. Laboratory Corrosion Data.
2. Data Sheets (please specify the grades in which you are interested).

Improve your Products with . . .
J&L STAINLESS STEEL
BAR • WIRE • SHEET • STRIP

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Box 4606, Detroit 34

CALENDAR
OF MEETINGS

Sept. 14-19, Instrument Society of America: Annual instrument-automation conference and exhibit, Convention Hall, Philadelphia. Society's address: 313 Sixth St., Pittsburgh 22, Pa. Executive director: William H. Kushnick.

Sept. 15-17, American Rocket Society: Fall meeting, Hotel Statler-Hilton, Detroit. Society's address: 500 Fifth Ave., New York 36, N. Y. Secretary: A. C. Slade.

Sept. 16-18, Electronic Industries Association: Fall meeting, St. Francis Hotel, San Francisco. Association's address: 1721 DeSales St. N.W., Washington 6, D. C. Secretary: James D. Secrest.

Sept. 17-18, American Supply & Machinery Manufacturers' Association Inc.: Industrial distribution forum, Hotel Statler-Hilton, Cleveland. Association's address: 2130 Keith Bldg., Cleveland 15, Ohio. Manager: W. B. Thomas.

Sept. 17-19, National Industrial Conference Board Inc.: General marketing conference, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

Sept. 19, Malleable Founders Society: Fall semiannual meeting, Hotel Cleveland, Cleveland. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

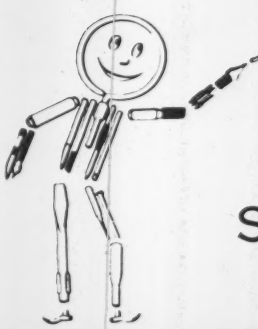
Sept. 22-23, Steel Founders' Society of America: Fall meeting, Homestead, Hot Springs, Va. Society's address: 606 Terminal Tower, Cleveland 13, Ohio. Executive vice president: F. Kermit Donaldson.

Sept. 22-24, American Management Association: Personnel conference, Statler-Hilton Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

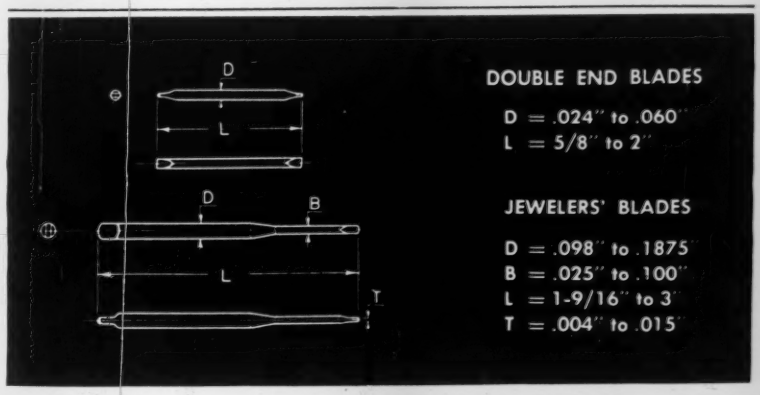
Sept. 22-24, Material Handling Institute Inc.: Greenbrier, White Sulphur Springs, W. Va. Institute's address: 1 Gateway Center, Pittsburgh 22, Pa. Managing director: L. West Shea.

Sept. 22-25, American Mining Congress: Metal mining and industrial minerals convention and exposition, Civic Auditorium, San Francisco. Congress' address: 1102 Ring Bldg., Washington 6, D. C. Executive vice president: Julian D. Conover.

Sept. 23-26, Association of Iron & Steel Engineers: Convention and exposition, Public Auditorium, Cleveland. Association's address: 1010 Empire Bldg., Pittsburgh 22, Pa. Managing director: T. J. Ess.

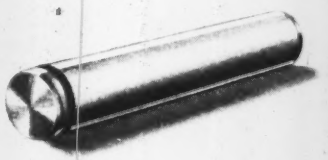


NEWS
from Torrington on
SMALL PRECISION METAL PARTS



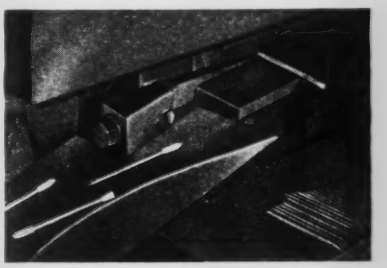
"Custom manufacture" has a special meaning at Torrington, where our Specialties Division produces a tremendous variety of small precision metal parts. For our engineers often help in designing parts for our customers, and as frequently develop special equipment or methods for most efficient production.

For example, one of our current contracts is for jewelers' screwdriver blades. In this case, our engineers decided to swage these parts to give the required high-strength characteristics without stress concentration points and tool marks. Other features of these parts are good dimensional accuracy and closely controlled heat treating for hardness and temper.



In another case, we received a blueprint of a special pinion axle with an accurately cut retaining ring groove at one end. The customer inquired whether this part could be produced at about the same price as a straight cylindrical axle with an uninterrupted OD. The answer was "Yes!" Specialties engineers decided that high-speed cutoff and groove-turning equipment would have to be built to cope with the high volume involved. Special pinion axles have now joined the great number of parts being produced by Torrington Specialties Division.

Whatever the part, whatever the operation—even operations tailored to the part requirements—Torrington's Specialties Division is uniquely equipped to handle your small precision parts contracts. Highly specialized fluting operations, for example, permit volume production to close tolerances. Precision swaging, knurling, forming, milling, drilling are among other operations for which we are fully equipped. Advanced heat treat and statistical quality control methods help provide the quality product you require.

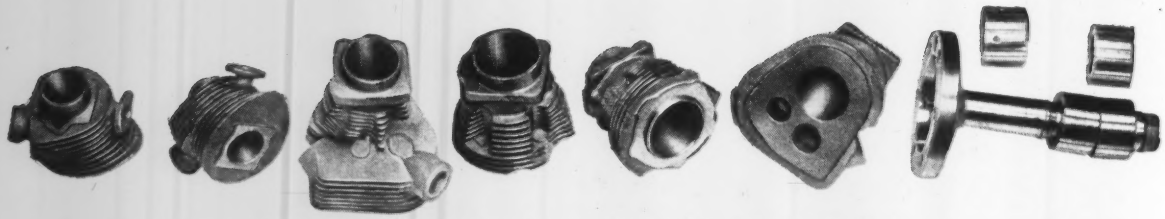


For help with your custom-built small precision metal parts in large quantities, just circle our number on the reply card. Or have your Purchasing Agent call our area salesman, or write direct to:

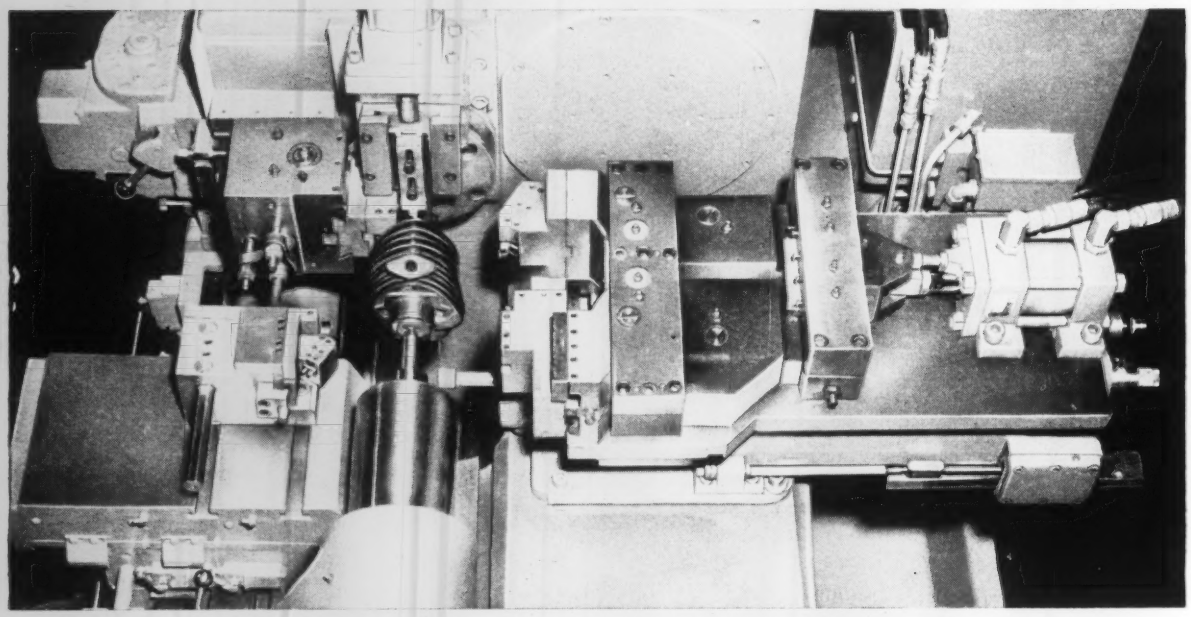
The Torrington Company, Specialties Division, 900 Field Street, Torrington, Conn.

TORRINGTON SPECIAL METAL PARTS

Makers of Torrington Needle Bearings



Six different sizes and types of workpieces are handled easily on this job. Extra expanding mandrel and sleeves at right are for different sizes.



How Harley-Davidson speeds motorcycle part production

Machines both ends in single chucking, using Gisholt No. 12 Automatic to get maximum accuracy, cut production costs

This well-planned setup reveals how Harley-Davidson Motor Co., Milwaukee, Wis., is handling cast iron front and rear cylinders.

Smart tooling on a Gisholt MASTERLINE No. 12 Automatic Production Lathe handles 6 different sizes and types of workpieces. Change-over is fast and easy. A special headstock-mounted, air-operated locating stop speeds work handling.

While tools in the front carriage turn and chamfer at one end of the piece, tools in a headstock-mounted auxiliary slide chamfer the I.D. on the other side. Simultaneously, tools on the rear slide face both ends for length. At the end of the cut, tool blocks on the rear independent slide swing open automatically to provide tool relief before withdrawal. Floor-to-floor time on the part shown is 1.2 minutes, only 1.8 to 3.6 minutes for the other 5 workpiece types and sizes.

The new Gisholt MASTERLINE No. 12 Automatic Production Lathe is designed specifically for high production operations; yet, it is flexible enough to handle a variety of similar parts in small repeat lots. The automatic cycle frees the operator to handle other machines or do other work.

Make a note to phone your Gisholt Representative today. Ask him to come in and show you where the fast automatic cycle and flexibility of the No. 12 Automatic Production Lathe can cut your floor-to-floor time and reduce your costs.

MASTERLINE GISHOLT SINCE 1887 GISHOLT

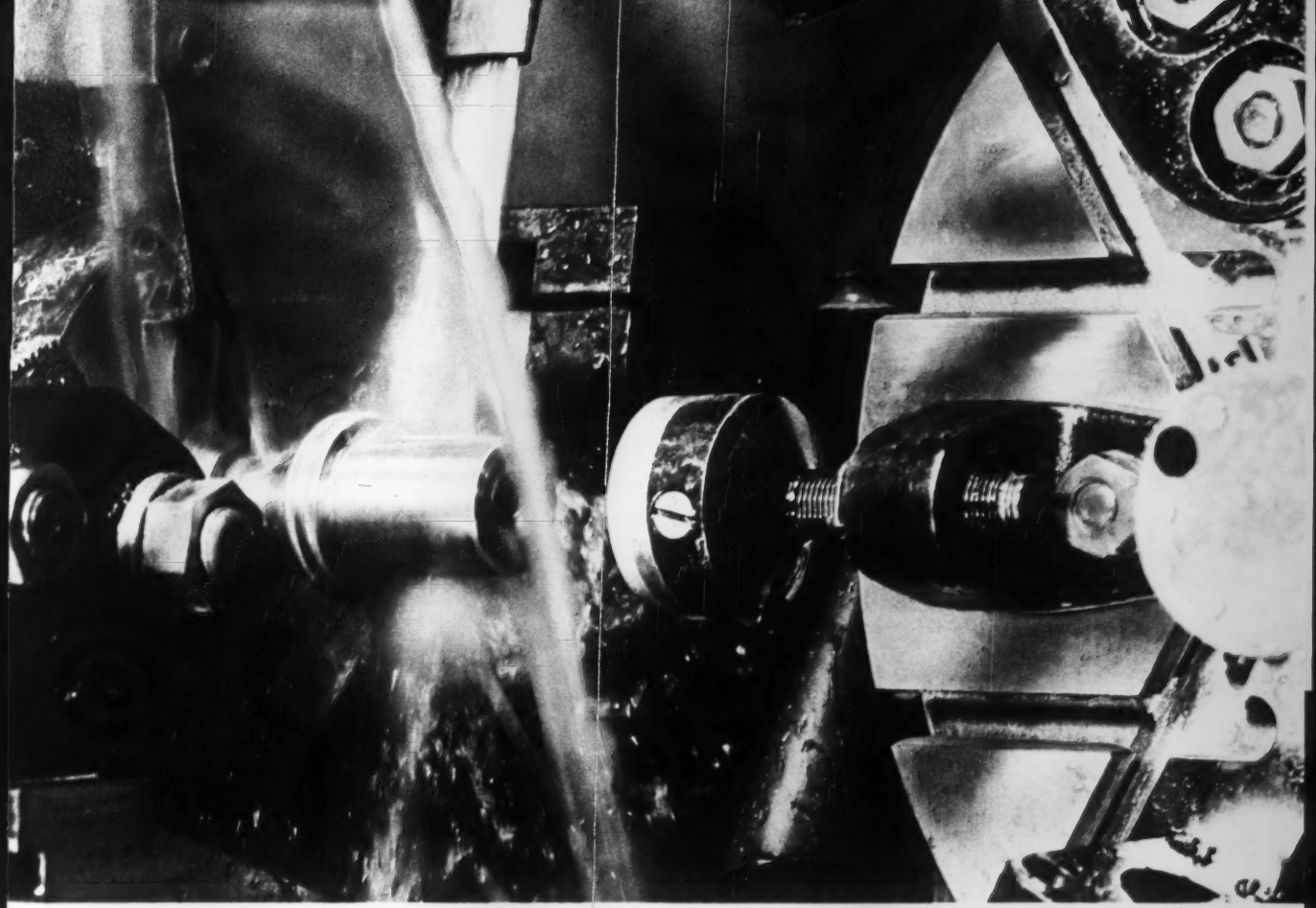
GISHOLT MACHINE COMPANY

Madison 10, Wisconsin, U.S.A.

WRITE GISHOLT TODAY for advance data on the new Gisholt MASTERLINE No. 12 Automatic Production Lathe. Ask for Form 1178.

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • PACKAGING MACHINES • MOLDED FIBERGLAS PLASTIC

ASK YOUR GISHOLT REPRESENTATIVE ABOUT GISHOLT FACTORY REBUILT MACHINES WITH NEW MACHINE GUARANTEE



Now–Bethlehem Leaded Bars

improved machinability

faster cutting speeds

longer tool life

smoother machine finishes

If you're doing automatic machining, you can start right now to get higher production and profits with Bethlehem leaded carbon and alloy steel bars.

Adding controlled amounts of lead to Bethlehem bars does not change mechanical characteristics of the grade of steel. To make sure that lead is distributed uniformly throughout the steel, we follow the most careful procedures in production. Next comes a series of quality inspections, to be sure that every bar is uniform. That's why you can count on the improved machinability of Bethlehem leaded bars—whether you're using leaded carbon or alloy bars.

Your nearest independent "steel service center" or non-integrated cold drawer will give you further information on Bethlehem's leaded carbon or alloy bars. Or, if you prefer, get in touch with us; one of our engineers will gladly discuss these free-machining steels with you. Just call or drop a line to Bethlehem Steel Company, Bethlehem, Pa.

Bethlehem engineers will help you with your steel-working problems

BETHLEHEM STEEL

Jumbo stein of glass and steel

When a brewer needs a large non-contaminating storage tank for his beer, chances are he'll insist on a rugged, glassed-steel tank such as those made by The Pfaudler Co., a division of Pfaudler Permutit Inc., Rochester, N. Y., makers of steel-and-glass equipment for process industries.

Here you see a typical glassed-steel tank emerging from the furnace treatment which fuses glass to steel. The shell of this tank was welded from carbon steel plates and flanged and dished heads furnished by Bethlehem, to back up the glass lining with the matchless strength of steel.

The uniform quality of Bethlehem plates, together with good welding technique, assures sound welds on a wide range of applications. Bethlehem plates are available in the full range of sheared and universal-mill sizes. Our sales engineers are available, too for whatever assistance you may need. Just call our nearest office, or write direct to Bethlehem, Pa.

Automobile wheel rims–a torture test for sheet steel

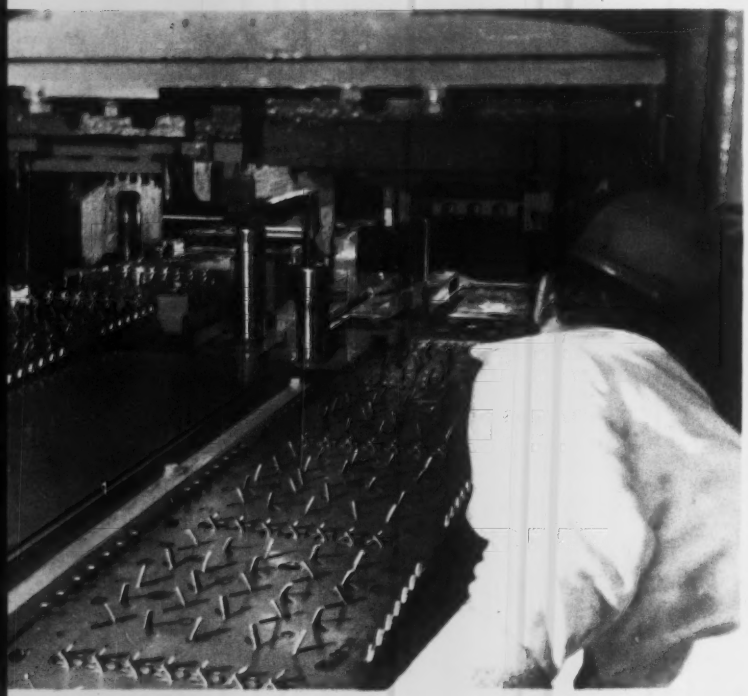
An automobile wheel is dramatic proof of the strength of sheet steel. But despite the hard beating that wheels must take year after year, the sheet steel endures even more severe torture in the making of wheels. For example in the forming of rims (right), strength in the sheet must blend with ductility while the rim is spun to the complex contour required. This is perhaps one of the severest of all tests imposed on steel sheets. Only top-quality sheets will take that kind of punishment with uniform success.

Bethlehem sheets are being formed into millions of rugged wheels for leading makes of automobiles. In any sheet metal or stamping operation, you can depend on Bethlehem steel sheets for reliable performance. Bethlehem sheets are as finely finished, as easy forming, as true to gage as any on the market. If you use sheets, perhaps we can help you turn a problem into a profit. Bethlehem Steel Company, Bethlehem, Pa.

Bethlehem engineers will help you with your steel-working problems

BETHLEHEM STEEL

Die of Bethlehem tool steel produces tricky floor-plate section



This 800-ton press blanks and forms 11-ga sheet steel into square floor plates containing lugs on sides and bottom for gripping the concrete sub-floor. Pieces are produced at the rate of 3,000 in a typical 8-hour shift.

The large blanking-and-forming die used here is made of Bethlehem's Lehigh H tool steel . . . a high-carbon, high-chromium, air-hardening grade that's easy to machine and heat-treat. You can count on it for long production runs because it has very high wear resistance. In this application up to 50,000 pieces can be turned out between dressings.

Bethlehem makes a full range of tool steels to meet practically every production need. Your tool steel distributor can give you fast delivery . . . and he can help you select the right Bethlehem tool steel for every job. In addition, our engineers are at your service.

Bethlehem Steels and Specialties

Here is a partial list of steels and specialty products in the Bethlehem line:

BARS AND BILLETS
Carbon and Alloy AISI Grades
Leaded
Special Rolled Sections

TOOL STEELS FOR EVERY JOB

FORGINGS: Drop, Press, Hammer, and Upsetter
Rolled-and-Forged Circular Products

SHEETS: Hot- and Cold-Rolled
Continuously Galvanized

PLATES: Sheared and Universal

ROD AND WIRE: General and Special-Purpose grades
Fine and Shaped Wire

WIRE ROPE AND SLINGS

FASTENERS: Standard Bolts, Cap Screws, Rivets
Special Fasteners

PIPE AND TUBES: Butt-Weld
Electric-Resistance-Weld

STRUCTURAL SHAPES

COLD-FORMED SHAPES

PALLET RACKS

WELDMENTS: Frames, Tanks

RAILS: Tee, Crane, Girder

CASTINGS: Carbon, Alloy, and Stainless Steel
Grey Iron; Brass and Bronze

PUBLICATIONS DEPARTMENT
BETHLEHEM STEEL CO., BETHLEHEM, PA.

Gentlemen: I would like additional information on

_____

Name_____

Address_____

City and State_____

M2

Bethlehem Steel Company, Bethlehem, Pa.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

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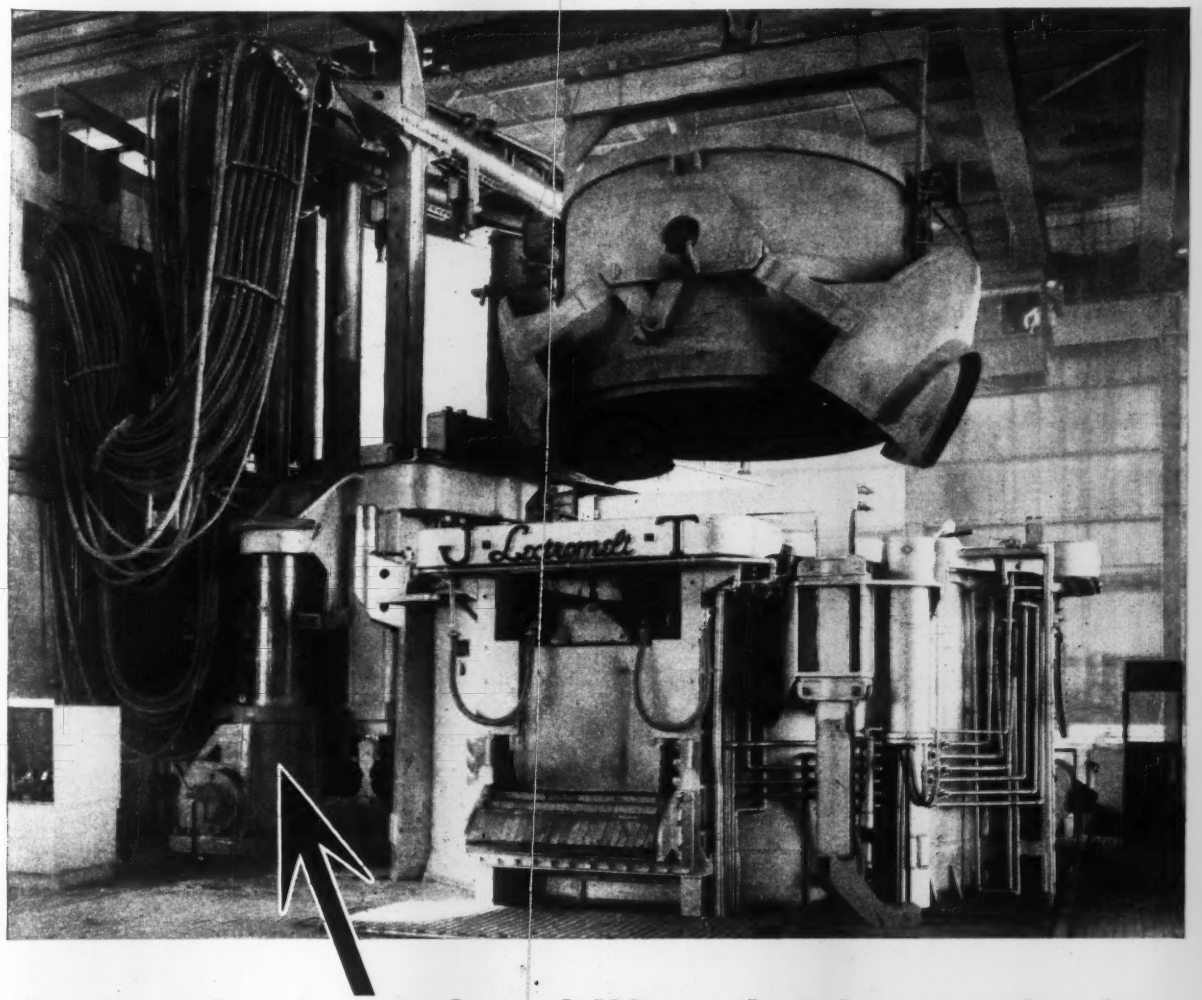


Separately mounted roof lift-and-swing mechanism on Lectromelt Furnaces . . .

Offers these advantages

★ No heavy parts attached to furnace shell to cause strain and distortion

★ No jarring of roof, electrode arms or ram parts when heavy charges are dropped into the furnace

★ Allows uniform heat radiation all around the shell

★ Roof lift mechanism is away from excess furnace heat

★ Roof can be lifted higher, permitting larger charges

★ Shells can be readily interchanged

★ ★ ★

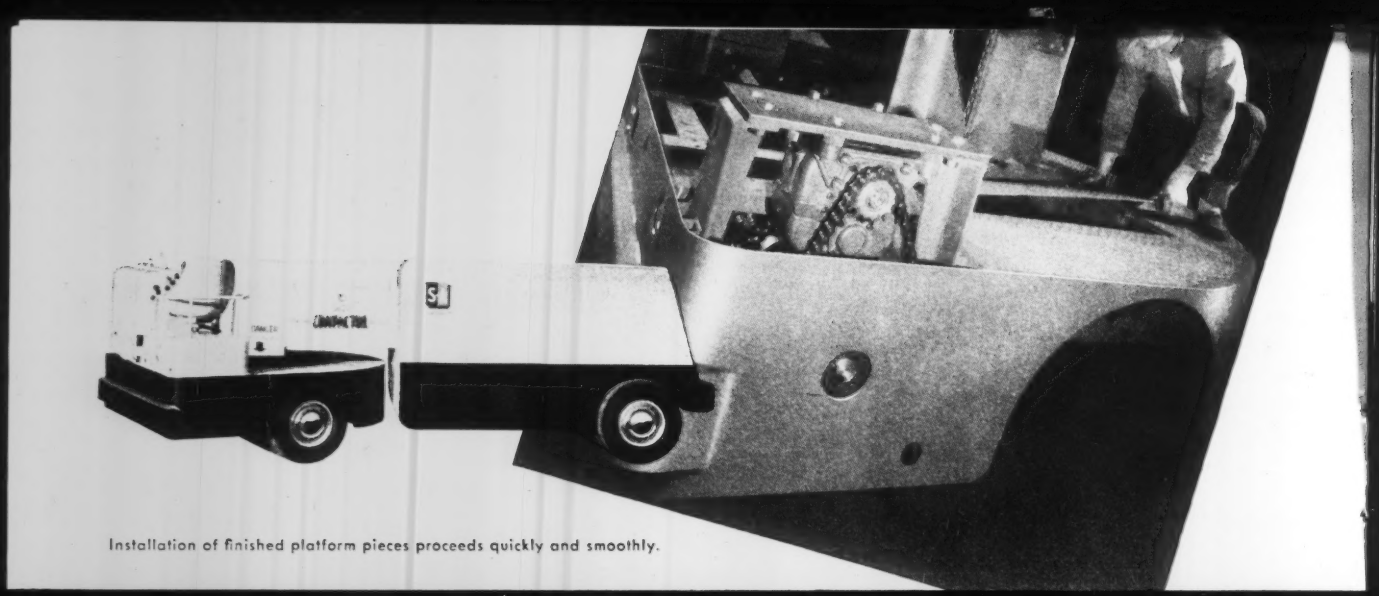
All good reasons for specifying Lectromelt furnaces. They're described in Catalog No. 10. Lectromelt Furnace Division, McGraw-Edison Company, 323 32nd Street, Pittsburgh 30, Pennsylvania.

Lectromelt®

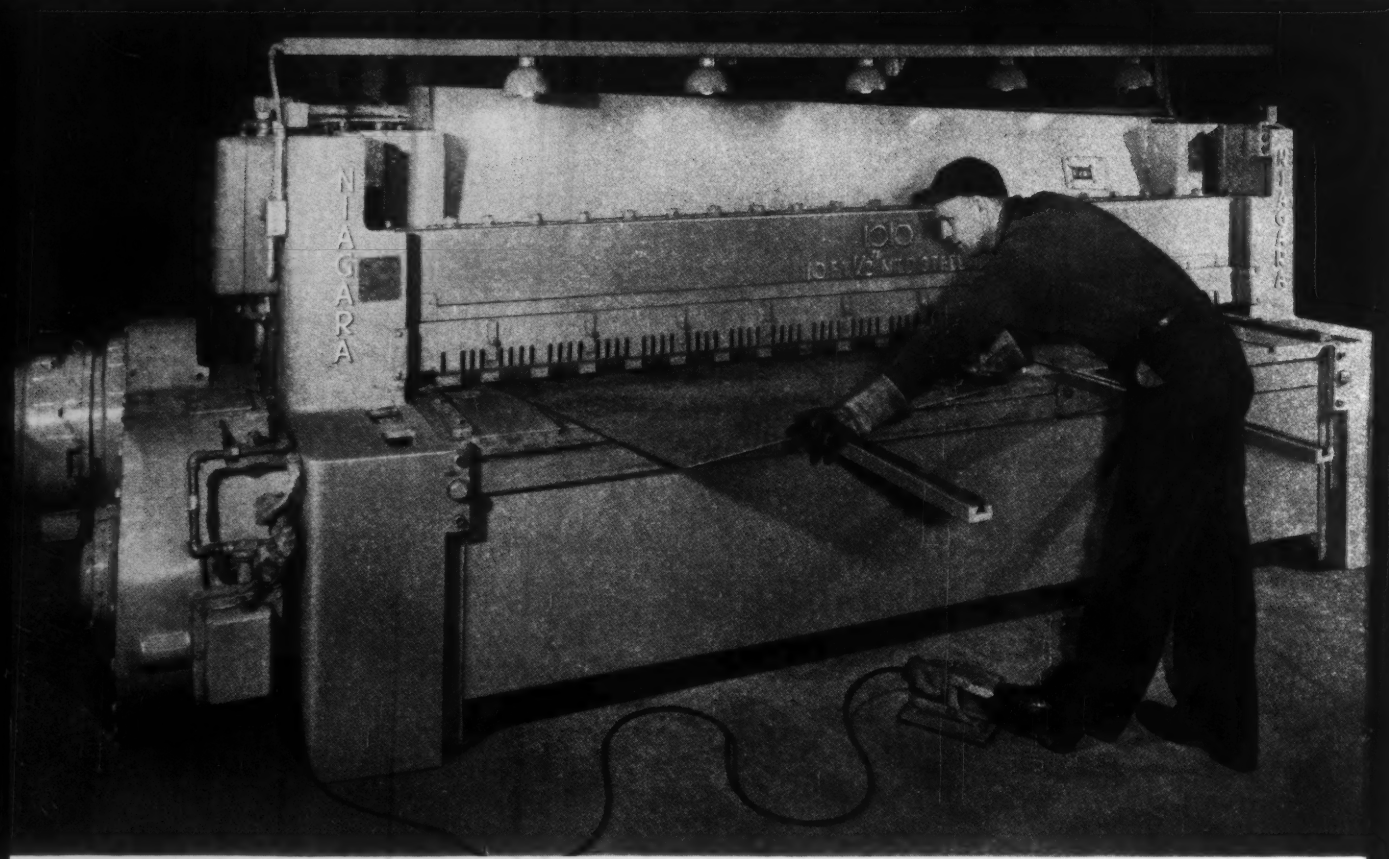
McGRAW-EDISON

STANDARD SIZES UP TO TWO HUNDRED TONS CAPACITY

CANADA: Canefco Limited, Toronto... ARGENTINA: Master Argentina, Buenos Aires... ITALY: Forni Stein, Genova... ENGLAND: Electric Furnace Co., Ltd., Weybridge... GERMANY: Demag-Elektrometallurgie, GmbH, Duisburg... SPAIN: General Electrica Espanola, Bilbao... FRANCE: Stein et Roubaix, Paris... BELGIUM: S.A. Stein & Roubaix, Bressoux-Liege... JAPAN: Daido Steel Company, Ltd., Nagoya



Installation of finished platform pieces proceeds quickly and smoothly.



Niagara Model 1010 shearing 16 gage safety plate for operator's platform of Pneumatic Compactor.

NIAGARA

America's most complete line of presses, press brakes, shears, other machines and tools for plate and sheet metal work

power squaring shears

"high accuracy ...utmost speed"

...sums up Seaman-Andwall's experience with Niagara Power Squaring Shears

Wisconsin manufacturer of road construction machinery uses Niagara Underdrive Power Squaring Shears to assure high quality and peak production.

Hard at work on America's highways, Seaman-Andwall compactors, rollers and other machines are opening the way to faster, safer travel.

Meanwhile, hard at work in the Seaman-Andwall plant, a Niagara Power Squaring Shear is opening the way to faster, more economical production.

"With Niagara's Shear in operation," says Seaman-Andwall, "we are able to cut 3 to 5 tons of steel per day. *The Niagara Shear gives us a high quality of accuracy with the utmost in speed and performance.*"

Seaman-Andwall is one of numerous plate and sheet metal fabricators who are making Niagara their choice for power squaring shears. And with good reason!

WHEN IT COMES TO ACCURACY, Niagara's positive, power-actuated self-compensating holddown contacts work with low impact, grips metal securely. Rigid, fully closed box section construction of bed, crosshead, holddown and housings resists all stresses with minimum deflection. Gaging facilities are ultra-accurate. Cutting within micrometer tolerances is assured.

WHEN IT COMES TO SPEED, more working strokes per minute, plus instant engagement of Niagara's exclusive sleeve clutch assure more cuts per hour. There's no need to adjust knife clearance for different thicknesses — holddown feet are self-compensating. Fully visible cutting line, ease of operation and quick-setting gages further boost hourly output.

WHEN IT COMES TO STAMINA, Niagara Shears are built to stand up on the toughest jobs. Simple design and minimum number of parts cut costly repairs. Vital drive components operate in a sealed bath of oil.

LEARN ALL ABOUT NIAGARA SHEARS IN THIS PICTURE-PACKED BULLETIN

See Niagara Shears at work in plants across the nation. Observe every feature, every detail. Learn why Niagara Shears can do the most for you. 74-pages — 141 revealing photographs and illustrations! 19 job photo reports! Specifications for 59 standard models. (Capacities: 16 gage to 1" mild steel. Cutting lengths: 4 to 20 ft.)

USE THIS COUPON FOR YOUR COPY BY RETURN MAIL

NIAGARA MACHINE & TOOL WORKS, BUFFALO 11, N. Y.

Send your new Bulletin 69G on Niagara Underdrive Power Squaring Shears.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

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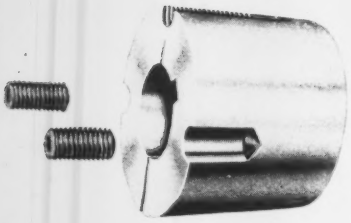
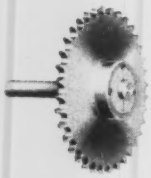
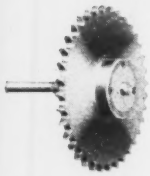
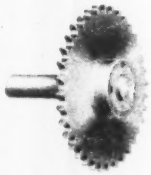
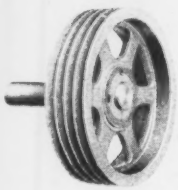
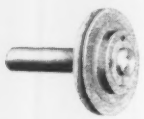
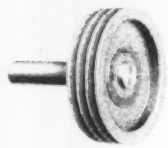
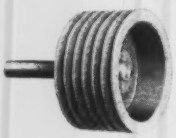
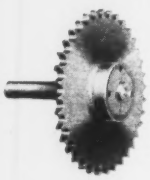
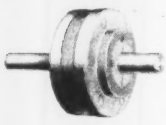
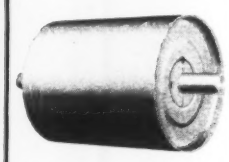


TAPER-LOCK Bushings are *Interchangeable!*

Change from shaft to shaft				
Change from size to size				
Change from sheaves to sprockets to couplings to conveyor pulleys				

Save Time!

There's nothing like Taper-Lock for mounting wheels on shafts! First, you get off-the-shelf convenience. No reboring, no machining, no waiting!

Save Work!

You get the holding power of a shrunk-on fit with minimum effort. Product and bushing slip on the shaft as a unit. Tighten the screws—and you're set!

Save Money!

You save big money by minimizing down-time with *quick* changes. And interchangeability minimizes inventory. Note that all of the above installations are handled with a total of only four bushings—all with the same outside diameter!

DODGE

of Mishawaka, Ind.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer".

DODGE MANUFACTURING CORPORATION, 4400 Union St., Mishawaka, Ind.

New Athey PW20 dump trailer built 11,000 pounds lighter with USS "T-1" Steel; has lower operating costs and new 3rd (or rear) door design.

Hauls payload over 3½ times its own weight!

—built entirely from USS "T-1" Steel

This new Athey Bottom Dump Trailer is unique. It weighs only 22,500 pounds but has a payload capacity over 3½ times as great: 80,000 pounds. According to the manufacturer, this high ratio of payload to weight is unequaled by any similar equipment.

Trailer weight reduced by 11,000 pounds. That's a lot of weight to take out of a trailer, but the job was done by using USS "T-1"* Steel throughout. This steel has high impact abrasion resistance and nearly three times the yield strength of structural carbon steel. This permitted reduction in plate thicknesses and a weight saving of 11,000 pounds. There was no sacrifice of strength or ability to take punishment.

Ready weldability. The trailer is all-welded, and the USS "T-1" Steel retains its superior strength and toughness after welding—at temperatures even down to 50 below zero. Thus, all parts of the body including the drawbar can be welded without loss of strength.

Build better with USS "T-1" Steel. No other steel possesses the remarkable combination of high yield strength (90,000 psi), toughness and weldability found in USS "T-1" Steel. When you also consider the high resistance to impact abrasion, you have a steel that will save money on construction and mining equipment. For more information, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

Remember that we also make USS COR-TEN*, USS TRI-TEN* *and* USS MAN-TEN* *Steels . . . standards for heavy-duty equipment.*

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United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

USS United States Steel

Critical-service reactor forgings "routine" at United States Steel

This closure-head forging for a nuclear reactor shell is a good example of how all United States Steel products are made to the tip-top edge of perfection.The reactor operates at very high pressure and is intensely radioactive. More than that, the entire shell, with its eight- to ten-inch-thick steel walls, is welded into a single, sealed unit. Can you imagine the prohibitive cost of replacing or repairing or even *examining* a forging that is in this type of service?

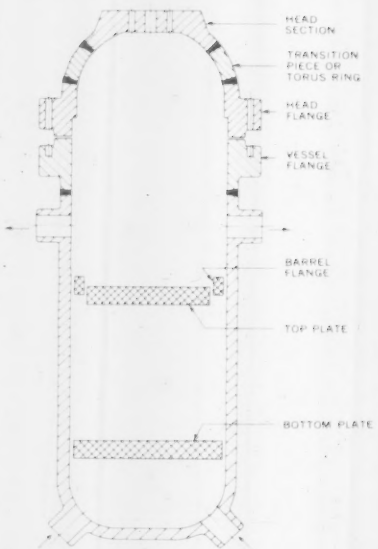
The small drawing shows a typical reactor vessel. "As-forged" diameters of the flange and transition forgings go up to 145 inches. They may be 30 to 50 inches thick, weighing up to 150,000 pounds in the rough. Head pieces, like the one in the big color picture, go up to 96 inches in diameter, 36 inches thick, 87,000 pounds.

To make these mammoth forgings, we teem manganese-nickel-molybdenum killed steel ingots that may weigh a quarter-million pounds. The ingots are cogged, upset, punched and mandrel-forged (in the case of ring forgings) and are annealed, double normalized, and double tempered—a process that may take as long as 700 hours. Then comes the rough machining on vertical boring mills, and quench and temper heat treatment. Inspection procedures are elaborate: ultrasonic inspection, magnetic particle inspection, plus tangential tensile, Charpy V notch impact, grain size and bend tests.

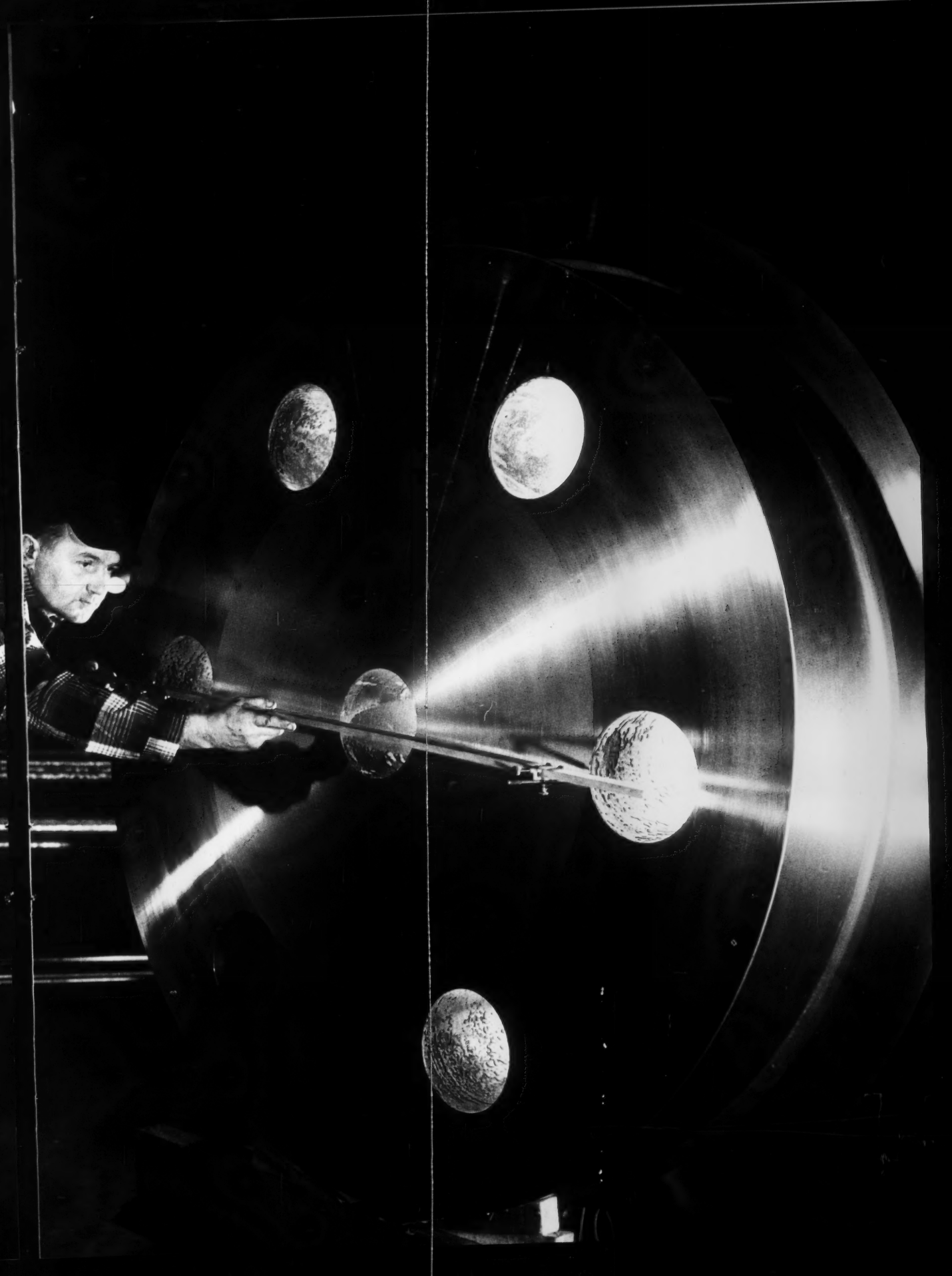
It's no surprise that so many builders of nuclear equipment specify and depend on USS Quality Forgings. The men of our Homestead Forgings Division who produce these parts have had a great deal of experience turning out equally critical forgings, such as the perfectly balanced shafts for steam turbines and generators. Critical work like this is routine, and perfection is a habit for the men who make USS Quality Forgings.

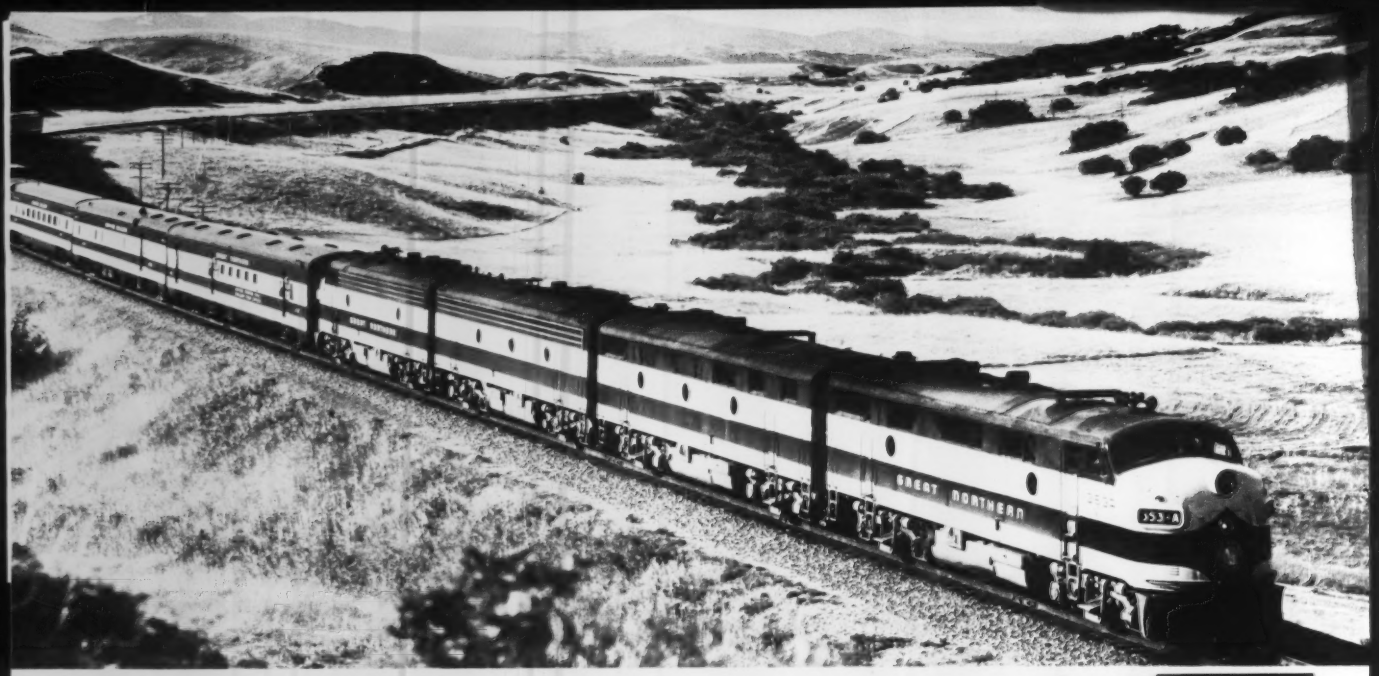
You get this same quality in *any* forging you order, because the same crew of highly skilled men work on every order, using the same steelmaking facilities and the same shop equipment. If you specify a USS Quality Forging, you can be sure that money won't buy anything better. We'd appreciate your inquiries or requests for our free 32-page booklet on USS Quality Forgings. Write to United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

USS is a registered trademark



USS United States Steel





How U. S. Steel Supply's Any Steel, Anywhere, Any Time Service "cuts scrap loss"

reported by **Mr. H. B. Nordstrom,** Director of Purchases,
Great Northern Railway Company, St. Paul 1, Minnesota

"By ordering steel pre-cut to individual specifications from U. S. Steel Supply, we have reduced profit-robbing scrap losses considerably," says Mr. Nordstrom.

"What's more, U. S. Steel Supply's Any Steel, Anywhere, Any Time Service has cut our inventory to practically nothing, deployed material handling personnel to other activities and in general improved the efficiency of our entire operation.

"For instance, if we need an 18-foot bar section—we get exactly that! We no longer worry about random mill lengths that could result in 6 to 7 feet of scrap loss. And it *is* scrap loss, because we cannot divert these scrap buildups to other uses. They're unadaptable special purchases. Frankly, we feel that odds are 100 to 1 against finding another use for a scrap piece."

If you have a problem concerning scrap loss, costly inventory requirements or maintenance delays due to late material delivery, perhaps one of our representatives can help you find a solution. For more information, write to U. S. Steel Supply at the address below.

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Remember . . . you get Any Steel, Anywhere, Any Time Service from . . .

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Why SHOULDN'T we be interested in close corporation insurance?

"We have to be! . . . our families' future security depends upon the future of our husbands' business."

The death of a principal stockholder in a close corporation can lead to financial chaos in the business. It can mean extreme hardship to the family of the deceased and to the remaining stockholders.

These hazards can be eliminated through a proper stock purchase and sale agreement funded by an effective business life insurance plan.

Ætna Life's Business Planning Service can be of assistance to your attorneys and accountants in setting up such a plan.

ÆTNA BUSINESS LIFE INSURANCE PLANS ARE SPECIALLY DESIGNED . . .

- To preserve PARTNERSHIP values when death comes to any partner.
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Gentlemen:
Please send me a copy of your new booklet "Will This Man Take Your Business With Him When He Dies?"

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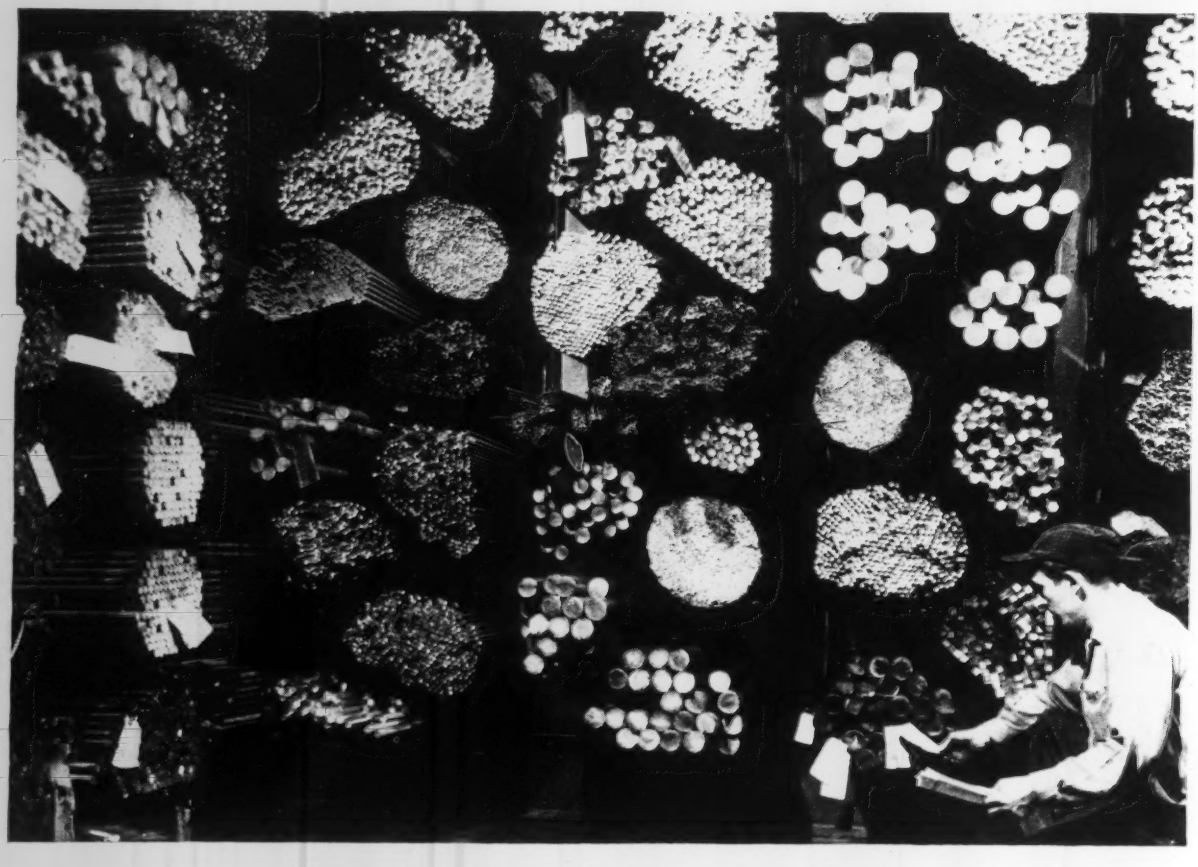

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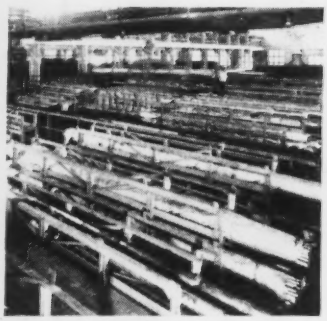
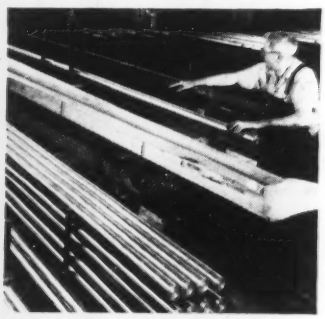
✓ ***Know-How.*** Every day Ryerson steel men—*specialists* in cold finished bars—are in touch with machining problems . . . latest techniques. This unequaled fund of experience is ready to serve you in selecting a steel that gives faster machining to closer tolerances . . . better finish.

✓ ***Reliabiiity.*** Year in and year out your most reliable source for cold finished bars is Ryerson. Call today. Prompt, personal service from experienced steel men proves that Ryerson service saves you time and money on your order for a few bars—or a truckload.



Widest size range always on hand, even including hard-to-get intermediate sizes.



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Metalworking Outlook

More Steel Price Hikes Coming?

"A few of us (on the Steel Committee of the National Association of Purchasing Agents) will not be surprised at steel price increases, particularly on extras, during the next ten months," reports Chairman T. W. Russell Jr., vice president of American Brake Shoe Co. He adds that most of the committee "feel that the steel industry has recouped as much of its increased costs as possible until the 1959 labor contract is signed." But the minority is "unwilling to believe that the steel industry will operate at 80 per cent of its capacity without preserving, at the minimum, its 1957 profit requirements." All concede that the July-August boosts were "very modest."

Auto Wildcats Fail

Wildcat strikes in the auto industry show no sign of breaking the Big Three's solidarity or of forcing management any closer to a settlement. The severity of the walkouts was easing late last week, indicating that the UAW might abandon that tactic.

Canadian Small Car Boom, Too

Canada, too, is proving a growing market for small, economy cars. The larger companies, with their present dealer organization, will probably be the nucleus of a strengthened small-car network. French-made Simcas, for example, will probably be sold through the present Chrysler Corp. dealers in Canada.

R&D Rises 4% in '58

Research and development spending in 1958 will rise an average 4 per cent over 1957's, an American Management Association survey discloses. Of the 24 industries covered, 18 showed an increase—from 2 per cent to 26 per cent (transportation equipment). Six showed a decline, the greatest being in construction machinery (15 per cent). Autos cut back 6 per cent, and the engine and turbine industry reduced 9 per cent. R&D spending in 1957 averaged 2.8 per cent of sales. Industries with the highest percentages were instruments (5.2 per cent), autos (5 per cent), electrical machinery (4.8 per cent), and aircraft (4.4 per cent).

Dollars for Missile Support

The Air Force will spend $503 million in fiscal 1959 for ballistic missile launching and support systems and $465 million for support for other types of missiles, says Aircraft Industries Association. Launching and support programs for the Atlas ICBM will run to $191 million, vs. $87 million for the

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Titan ICBM. The Thor ICBM's support will cost $91 million, the Jupiter's $118 million. The Bomarc's support will take over $346 million, 70 per cent of the dollars to be spent on nonballistic missile support. Look for contracts in fiscal 1959 covering 85 per cent of these support programs.

Nuclear Ships Feasible

Ships powered by nuclear energy are now economically feasible in comparison with conventional ships, especially on long routes and at high speeds. Nuclear powered shipping is particularly attractive in commerce that requires small ships on long routes. The feasibility of nuclear ships will improve by 1965 and again by 1970. Those are conclusions of American Radiator & Standard Sanitary Corp.'s American-Standard Atomic Energy Div., presented at a symposium on nuclear ships sponsored by the Maritime Administration and the Atomic Energy Commission.

Breakthrough on Power Transmission

Westinghouse Electric Corp. has achieved a "major breakthrough" in handling "extra high voltages" by developing equipment to economically transmit electricity ranging up to 500,000 volts over great distances and at high altitudes. Voltage transmission has previously been limited to the range of 220,000 to 345,000. The higher voltage can now be transmitted at virtually any altitude up to 12,000 ft. Significance: Greater economies which will permit several power companies to integrate their services; new access for electricity to remote mountain areas.

AISI Reports on Russia

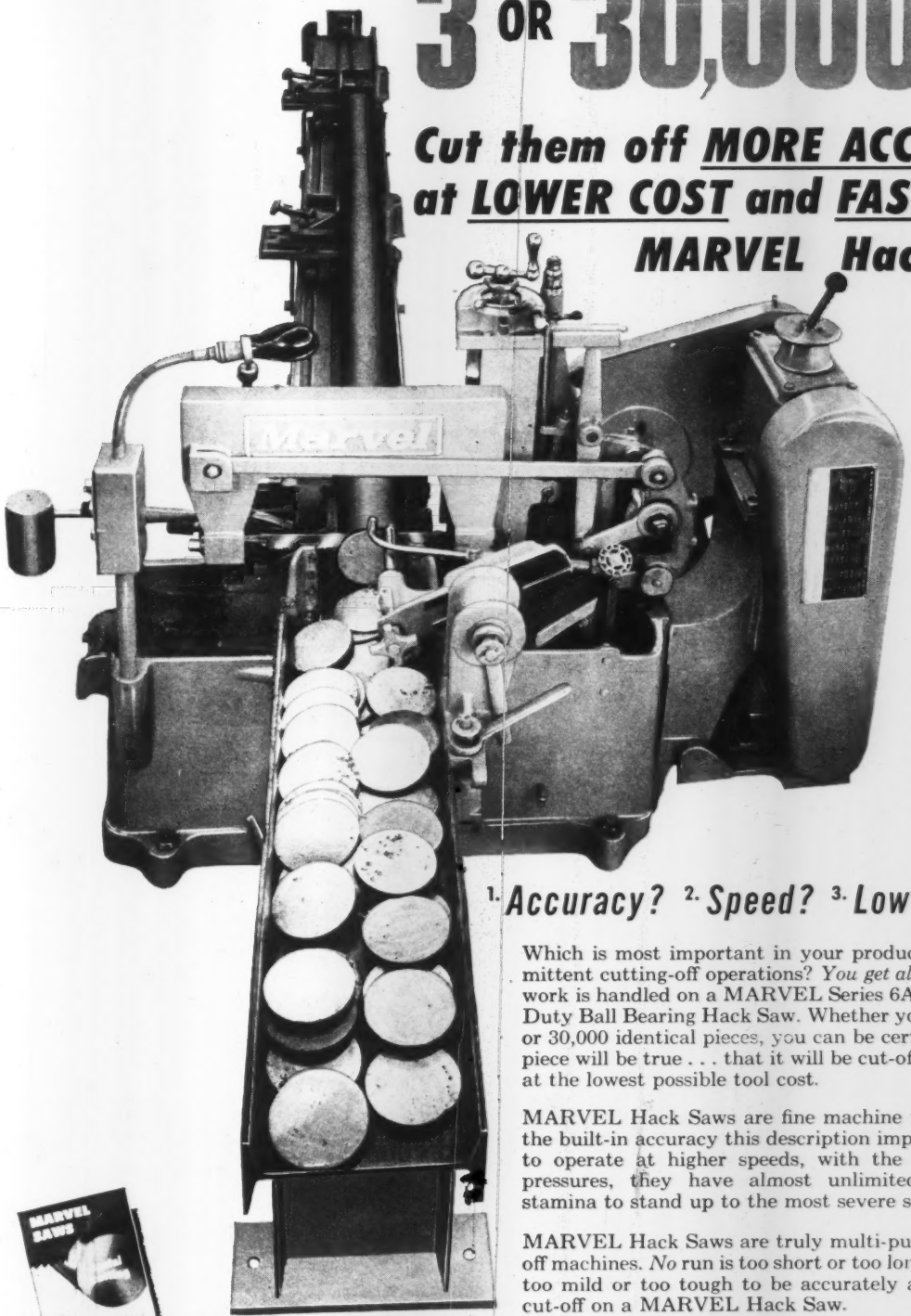
The American Iron & Steel Institute has just published a 40-page report of its delegation's trip to Russia. (A member of the delegation was STEEL's editor-in-chief, Irwin H. Such, whose analysis of the Russian steel industry begins on Page 85.) The study will be followed by a technical report to be published when notes taken by the American delegation are evaluated.

Straws in the Wind

U. S. Steel Corp.'s Quebec Cartier Mining Co. plans to build an ore concentration mill at Lac Jeannine, Que., capable of producing 8 million tons of high grade concentrates per year, to be marketed in Canada, the U. S., and Europe . . . American Gear Manufacturers Association's index for July was 133.3 of the 1947-49 average, a volume decrease of 23.3 per cent from June's . . . The World Bank loaned Kobe Steel Works Ltd. of Japan $10 million for a new blast furnace and related facilities . . . Coal supplies more than twice as much fuel for the nation's steam-electric generating plants as natural gas and oil combined.

3 OR 30,000 PIECES

Cut them off MORE ACCURATELY at LOWER COST and FASTER on a MARVEL Hack Saw



1. Accuracy? 2. Speed? 3. Low Cost?

Which is most important in your production or intermittent cutting-off operations? *You get all 3* when your work is handled on a MARVEL Series 6A or 9A Heavy Duty Ball Bearing Hack Saw. Whether you're cutting 3 or 30,000 identical pieces, you can be certain that each piece will be true . . . that it will be cut-off quickly, and at the lowest possible tool cost.

MARVEL Hack Saws are fine machine tools, with all the built-in accuracy this description implies. Designed to operate at higher speeds, with the heaviest feed pressures, they have almost unlimited power and stamina to stand up to the most severe service.

MARVEL Hack Saws are truly multi-purpose cutting-off machines. *No* run is too short or too long, *no* material too mild or too tough to be accurately and efficiently cut-off on a MARVEL Hack Saw.

Catalog C56 has complete details, facts and figures on MARVEL Metal Cutting Saws. Write for it today.

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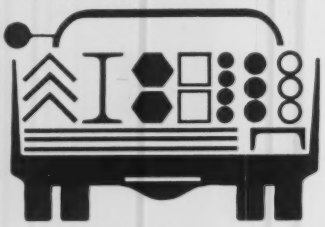

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Save money by cutting production costs right down the line...

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STEEL

Don't Underrate Soviets

Don't get the impression that the Soviet Union's industrial expansion and production goals are unattainable, or that its people feel downtrodden.

Soviet planners are having trouble meeting target dates, but it does not mean that they will not meet them eventually.

In a comparatively few years, the Soviets have succeeded in converting a largely agricultural nation into one that is firmly in second place (economically and industrially) in the world.

Soviet scientists and engineers are conversant with the latest technical know-how, including steelmaking. (See STEEL's special report, Page 85.) They have made significant contributions on their own.

The USSR can meet its essential requirements for steel, nonferrous metals, and the equipment needed to keep on building its industrial strength and that of its populous neighbor, China.

This will give you an idea of the progress Russian steelmakers have made: They could produce less than a tenth as much steel as the U. S. could in 1930. Now they can make nearly half as much, and the spread will get narrower unless the U. S. launches another round of expansion in the 1960s.

While the USSR adds to its industrial might, its people are doing without the automobiles, refrigerators, washing machines, and the thousands of things made of metals that Americans regard as necessities.

But the people are better off than they were. They no longer have to wrap their feet in straw and rags in winter. They have leather boots and shoes. Food, while monotonous, is not rationed. New housing is going up everywhere. More things made of metals are becoming available.

Effective wage incentives and propaganda keep them working hard. The gaudy Moscow and Leningrad subways are symbols of what they can expect in the future.

The ultimate objectives of the Soviet Union are twofold: 1. To catch up with and surpass the U. S. in industrial strength. 2. To replace free enterprise with world communism.

It is making progress.

Irwin H. Such
EDITOR-IN-CHIEF

Bringing two purchasing agents together over a friendly lunch resulted in an unusual sale.

It all started at the plant of an appliance manufacturer where Jack Hammond, an Inland sales representative, watched as a 12" diameter hole was blanked out of a sheet of steel. Noting carts filled with the punched out discs, he asked what was done with them. "We sell them for scrap," was the answer.

A few days later, Jack was in the plant of another customer . . . a metal specialty fabricator. Here, he saw a cup being drawn from steel circles . . . and got an idea. After cross-checking specifications, he found that the scrapped blanks of customer "A" would work perfectly for customer "B."

Getting these customers together at lunch had this happy result: one, now, obtains a much better price for his blanks . . . the other has a steady source of preshaped steel circles at a price that reduces his production costs over $6,000.00 a year.

We like to feel that Jack's action in this instance is typical of all Inland sales representatives. We think that their interest goes beyond just "selling steel." We hope you do too.

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INLAND

Dave McDonald, left, is jousting with Donald C. Rarick, right, for the USW presidency. Nicholas Mamula, center, president of Local 1211, Aliquippa, Pa., backs Rarick. This year's convention will show how much strength McDonald has

McDonald Faces a Showdown Fight

The USW boss will be hit with a major test at next week's convention. If he fails it, he'll lose the respect of both labor and management. Dues could be a prime issue

DAVID J. McDONALD'S moment of truth is approaching. Next week he'll show the world whether he's still boss of the United Steelworkers of America. His handling of the union's ninth constitutional convention (Atlantic City, N. J., Sept. 15-19) will provide the answer.

Pro, Con—If Mr. McDonald routs the forces that opposed him in 1956, he won't have to prove anything during next summer's contract negotiations. He won't be under pressure to justify his existence through unusually exorbitant demands; his authority won't be questioned by steel industry negotiators; and there will be no doubts about his ability to get a contract ratified.

If Mr. McDonald yields to union rebels but manages to keep his job, he'll lose the respect of both union and management. To satisfy critics, he'll have to get tough in contract talks. If he does, he'll get hard answers from management. Probable result: A long and costly steel strike.

Dues Rebellion—At the last USW convention (Los Angeles, 1956) dues were raised from $3 to $5 a month. Mr. McDonald's salary was hiked from $40,000 to $50,000 a year, even though he (like Caesar declining a crown) thrice refused it. Dues protesters lost their fight at the convention but gained a prime issue for the 1957 elections. Rallying around Donald C. Rarick, grievance committee man from McKeesport, Pa., they tried to unseat the union's leadership.

"The dues increase was just the spark that blew the powder keg," says Nicholas Mamula, rebel president of Local 1211, Aliquippa, Pa. "Members were fed up with the arrogance of international officers, district directors, and staff representatives. It didn't take much to bring their resentment to the surface."

An assistant annealer at U. S. Steel Corp.'s Irvin Works, Dravosburg, Pa., Mr. Rarick decided to run for president of the USW. To get on the ballot, he had to be nominated by at least 40 locals. Although opposed by McDonald men at al-

most every local he visited, Mr. Rarick won 91 nominations. On election day (Feb. 12, 1957), he got 223,516 votes to President McDonald's 404,172.

Why this rebuff for the USW's chief? Probably because he has never seemed quite genuine as labor's defender. A front office man from the start, he doesn't look, act, dress, or talk like a steelworker. But he has done well by the union: When he succeeded Philip Murray as president in 1952, average gross earnings per manhour in steel were $1.99. By May, 1958, they were $2.76 (vs. $2.51 in the automotive industry, $2.25 in durable goods manufacturing, and $2.12 in all manufacturing).

Trouble Ahead—Despite success as a wage negotiator, Mr. McDonald faces trouble at Atlantic City. In June, Mr. Rarick was elected president of Local 2227 and Mr. Mamula president of Local 2111 (second largest in the country). Both will probably be delegates to the convention. The Mamula local adopted three resolutions: 1. To cut $10,000 a year from the salaries of Dave McDonald, the vice president, and the secretary-treasurer of the USW. 2. To rescind the $2 a month dues increase. 3. To make staff representative jobs elective instead of appointive.

At McKeesport, Pa., Local 1408 adopted a resolution asking that Mr. McDonald be "chastised" for failing to make adequate job security gains. Anthony Tomko, president, said his membership felt that the president didn't show proper "aggressiveness" in seeking a subsidy program, improved pension, and a 6-hour day.

Leaders at Odds — Mr. McDonald's critics assert that he has more to worry about than dissatisfaction among the rank and file. They point out that both I. W. Abel, international secretary-treasurer, and Howard R. Hague, vice president, drew more votes than their boss (Mr. Hague was unopposed). "There are at least two factions on the international level," a rebel leader claims. "They hope to unseat McDonald the next time around. At least six of the 30 district directors are building a machine."

Much as they'd like to see him out of office, Dave McDonald's opponents don't expect him to resign. "I can't conceive of his being forced out at Atlantic City," says Nick Mamula. "The only way he'll go will be if he's voted out. That won't happen before the February, 1961, election." (The president's term ends on May 31, 1961.)

McDonald's Answer—Speaking at Washington, Pa., a month ago, Mr. McDonald made it clear he won't resign. "Personal attacks I can shrug off," he declared. "But when these attacks are aimed . . . to panic our members and to create an impression that our union is coming apart at the seams, then I reach the boiling point." He divided his enemies into two groups: 1. "Representatives of big business" (National Association of Manufacturers, U. S. Chamber of Commerce) which are trying "to discredit organized labor in every way they possibly can." 2. "Iniquitous subversive organizations" which are "playing hand in glove with the NAM" to promote their own welfare.

USW officials say reports of dissension have been greatly exaggerated. "We're aware that we have opposition," says a union spokesman, "but we know of only four locals where the dues rebel slate has been successful. We believe the convention delegates will give overwhelming support to the administration." At Braddock, Pa., Local 1219 (which voted 3 to 1 for Mr. Rarick in 1957) returned to the fold, defeating all resolutions sponsored by the rebels.

Dave's on Top—Mr. McDonald's control of the convention—and the union—is vested largely in his power to appoint staff (field) representatives. Throughout the year, they serve as liaison officers between the locals and the international, keeping headquarters alerted to grass roots sentiment. When conventions are held, some locals may lack the funds to send delegates. In that case, they frequently give staffmen their proxies. Result: President McDonald has a substantial block of votes under control when the convention opens. (USW officials defend the practice by saying that no hostile local would authorize a staffman to act for it.)

Although the USW's district directors are elected by the rank and file, they're often captives of the administration. Mr. McDonald's staff representatives work out of their offices, keeping them under constant surveillance. A director might oppose the administration but not without risking the loss of his $16,000-a-year job. It takes little imagination to visualize how staffmen working in the locals could engineer a director's defeat.

How Cartoonist Cy Hungerford Sees the Steelworker Rebellion in the Pittsburgh *Post-Gazette*

Baby has the colic

Getting hard to handle

Rarick Has Problems, Too—No sooner had Don Rarick won the presidency of Local 2227 than the international canceled the easy terms it had been extending to it. During the administration of his predecessor, I. W. Abel allowed Local 2227 to repay a loan at the rate of $1500 a month, instead of $3000. When Mr. Rarick came in, original terms were reinstated.

With a third of its members out of work, Local 2227 can barely meet its operating expenses. Members tabled a motion to send delegates to the convention on the ground their treasury wouldn't permit it.

Mr. Rarick fears the USW president will appoint an administrator for his local, but most rebels discount the possibility. Some think the USW would have difficulty proving that Mr. Rarick's activities have been illegal or unconstitutional. Others say Dave McDonald is "too smart to try something like that." They feel he'd just be inviting another congressional investigation.

There's evidence that at least one local has sent an anti-Rarick resolution to the convention. Introduced by a staff representative, it asks that he be suspended for five and a half years because of his "violations" of the USW constitution.

What Rarick Wants — In Mr. Rarick's opinion, steelworkers are less interested in wage increases than in fringe benefits. "As soon as there's talk of higher wages, prices go up," he explains. His program calls for:

1. Earlier retirement, with eligibility based on years of service instead of age.

2. Hospitalization with full coverage (companies to bear a larger share of the expense).

3. Pensions for employees who become physically or mentally unfit for work.

4. Racial equality in job assignments.

5. Better vacations, especially for men with 15 to 25 years' service.

6. Better working conditions.

"McDonald could defeat us by a smashing margin," says Nick Mamula, "if he'd endorse this program:

"1. Make staff representative jobs elective instead of appointive.

"2. Compromise on the monthly dues (reducing them to $4, at least).

"3. Put special assessment back on a referendum basis."

Rebels' Platform — "If we were running the USW, we'd let members elect their own staff representative," Mr. Mamula continues. "We'd try to sell them ideas instead of relying on force. We would ask management for a greater voice in management affairs. We would be the disciplinarians in the steel plants. In the early stages, management might think we were harder to get along with than McDonald, but once they saw that we weren't bulls in the china shop, they could sit back and let us run the show."

Picket Violence May Wane

Courts have ruled that nonstriking workers may sue unions for damages if prevented from entering plants. Costs paid by UAW: $168,626. Result: More peaceful strikes in future?

DON'T overlook the United Auto Workers $118,500 out-of-court settlements with 26 nonstriking workers at Wolverine Tube Div., Calumet & Hecla Inc., Decatur, Ala. Significance is two-pronged: Future UAW picketing should be more peaceful; the incident proved the value of good employee relations.

The settlements grew out of the now famous Paul Russell case (the U. S. Supreme Court affirmed a lower court's decision that a worker can sue a union for back pay and damages when prevented by picket lines from reaching his job).

Mr. Russell and 29 others filed $50,000 back pay and damage suits when they were kept out of the plant during a strike in 1951. They were not union members.

What Happened—The strike occurred while the UAW was negotiating its first contract with Wolverine. The union had won a representation election by a small margin. Talks deadlocked over wages, an arbitration clause, and a union membership maintenance provision.

Picket lines formed and violence flared as nonunion employees tried to enter. After five weeks, 200 workers petitioned the management to resume operation. They were escorted into the plant by police.

The contract was never signed, and the union withdrew.

Court action by the 30 employees began in 1952. The Morgan County (Ala.) Circuit Court awarded Mr. Russell $10,000. The union appealed to the Alabama Supreme Court and then to the U. S. Supreme Court. It claimed the circuit court did not have jurisdiction and that the case should have gone before the National Labor Relations Board. Both high courts upheld the lower court decision.

The Circuit Court also heard the cases of N. A. Palmer and James Thompson. Mr. Palmer received $23,600 and Mr. Thompson $12,100. Mr. Russell's total $14,250 included appeal penalty and interest.

Four other cases were scheduled for the Circuit Court in August and September. The UAW decided to quit out of court and negotiated on a $6000 settlement and twenty-five $4500 settlements. One of the 30 died and his family did not revive the suit.

Total cost to the union: $168,626, plus court costs.

Results—Labor observers view the case as a step away from picket line violence. With striking employees entitled to benefits and nonstrikers able to sue for damages if prevented from crossing picket lines, costs of a strike go up substantially.

Equally important in the case, industrial relations executives point out, is the employee relations job by Wolverine management. The UAW had conducted a two-year campaign to push through a representation election. But when the work or no work showdown came, enough workers came back into the management camp to permit operations to be resumed and to force out the union completely.

Kaiser Aluminum & Chemical Corp.

Aluminum's Status in 1958

Primary Capacity Up . . .

By end of 1958 — 2,224,500*
At end of 1957 — 1,839,000

So Are Primary Imports . . .

1958 — 230,000*
1957 — 222,158

While Domestic Output Falls . . .

Primary: 1958 — 1,592,000*
1957 — 1,647,710

Secondary: 1958 — 377,000*
1957 — 383,000

Lowering Total Availability. . .**

1958 — 2,199,000*
1957 — 2,252,868

But Supply Still Exceeds Demand . . .

U. S. Consumption: 1958 — 1,750,000*
1957 — 1,926,000

All figures in tons.
*Estimated by STEEL.
**Includes imports, primary output, secondary recovery.

Aluminum: Slump Beaten, Sales Improving

ALUMINUM demand is down, but the final 1958 tally will show the industry weathered the recession better than most other metal industries.

Business Up — Sales have been improving since early spring. Producers say the recession low came in last year's fourth quarter and in the first part of 1958.

Consensus is that mill product shipments will at least equal last year's (see table, Page 49). Second quarter shipments were 18 per cent better than the first period's. Estimates indicate the third quarter is running a little ahead of the second. The fourth is expected to be 1958's best.

Major gains this year are expected to come in extrusions, foil, and (to a lesser extent) sheets. Says Eric West, president, Aluminium Ltd. Sales Inc., New York: "Independent extruders are doing a good business today."

The biggest falloff will be in rods, bars, and wire. Secondary producers have been hurt by slumping demand for diecasting metal, mainly caused by the drop in auto production. First half shipments were about 30 per cent under those of the same period last year. Fourth quarter figures are expected to improve.

Trend—Reynolds Metals Co. sees this pattern in consumption of mill products: "Over the last several years, extrusions have been increasing faster than other products. This should continue because of the savings in machining and labor costs they offer. Demand for sheets, plates, and foil is also expected to show a marked increase. Powder has had a relatively stable civilian market. Forgings, rods, and bars have been affected by declining military procurement programs. We find a trend toward the use of larger and heavier extrusions and structurals as the welding and handling characteristics of aluminum become more familiar to fabricators."

Troubles—More availability than

demand (see table, left) is not the only headache plaguing the industry. Expiration of put rights, some price weakness, and excess capacity are pressing problems.

Puts—Shipments to the government under put right provisions help explain why total sales have held up. It's estimated that 344,500 tons will go to Uncle Sam this year, compared with 208,144 tons in 1957. The hitch: Aluminum Co. of America and Kaiser Aluminum & Chemical Corp. have contracts ending this year. Reynolds' contract extends into 1959. After it expires, the only contract will be with Harvey Aluminum Inc. Producers will have to sell more aluminum just to maintain their current position.

Prices — Producers are getting less for their metal since the Apr. 1 price slash of 2 cents a pound. Part of the drop was recouped Aug. 1 when the primary price went up 0.7 cent a pound to help compensate for a 1958 wage package of 24 cents an hour. Industry profits were down substantially before the wage increase, and the August hike only partially covers the higher labor costs. Prediction: If business continues to pick up, look for a price bump early next year.

More Capacity—Domestic industry capacity will increase this year (see table, Page 48). Two reasons: 1. Major companies have increased capacity. 2. Two new aluminum producers have come on the scene.

Here's how domestic capacity breaks down (in tons): Alcoa, 792,500; Reynolds, 601,000; Kaiser, 537,000; Anaconda Aluminum Co., 60,000.

Ormet Corp. started production at its Omal, Ohio, plant this spring and will be operating at capacity (180,000 tons yearly) by January, says N. H. Collisson, president. Ormet will turn out about 55,000 tons of metal this year.

The other newcomer, Harvey Aluminum Inc., started operations last month at its 54,000-ton reduction plant at The Dalles, Oreg. It's believed Harvey will produce about 14,000 tons of metal by year-end.

Producers have announced intentions to bring in 205,000 more tons in 1959 which will hike the domestic industry's capacity to 2,429,500 tons.

Other Countries — Production outside the U. S. (including the Soviet bloc) is expected to hit 2,390,000 tons this year, vs. 2,113,000 in 1957.

Imports—Expanding output has led to an increase in pig imports. Aluminium Ltd. will probably bring in less metal this year than last (STEEL's estimate: 185,000-195,000 tons, vs. 205,000 tons in 1957), but other nations are stepping up U. S. shipments.

Rising imports of mill products concern domestic companies. They have a weakening effect on the domestic price structure, producers say. Hardest hit are makers of sheet circles and some foil and rod items.

Where Is It Going?—One of the biggest problems facing producers is "which bird to shoot at," says Reynolds' general sales manager, William Ingram. His reference: To which of the new and expanding markets should major emphasis be given? Examples: Aluminum wallpaper, outdoor foil billboards, disposable cookware, ordnance vehicles, atomic energy components, pigments.

Producers hope that penetration of present markets will account for the large tonnage gains. Here's what one producer thinks consumption will be by 1965: Home and building construction, 1.48 million tons; automotive, 1.26 million tons; railroads, 415,000 tons; highway construction, 280,000 tons; packaging, 196,000 tons; electrical, 192,000 tons; appliances, 146,000 tons; marine, 126,000 tons.

All observers think the two largest gains will be in automotive

Aluminum Begins To Recover

Mill Products Shipments Expected To Best 1957's

	Tons		
	1956	1957	1958*
Sheets, plates, welded tubing	702,500	609,500	612,000
Extrusions (including drawn tubing)	382,500	381,500	390,000
Electrical conductor cable	122,000	116,000	116,000
Foil	95,000	102,000	107,000
Rods, bars, wire	89,000	83,500	70,000
Forgings	38,000	32,000	32,000
Powder, flake, paste	14,000	14,000	13,000
Totals	1,443,000	1,338,500	1,340,000

Source: Bureau of the Census. *Estimated by STEEL and major producers.

Trends in Aluminum Usage

Markets	1955 (%)	1960 (%)	1965 (%)
Building & Construction	20.8	24.9	24.2
Transportation (excluding aircraft)	12.4	17.5	18.6
Electrical	10.0	10.7	11.5
Machinery & Equipment	5.7	10.7	11.2
Consumer Durable Goods	11.8	11.6	10.8
Miscellaneous & Unidentified	19.8	7.9	7.1
Containers & Packaging	4.3	5.6	6.5
Aircraft & Missiles	7.1	5.0	5.0
Destructive & Deoxidizing	5.8	4.4	3.8
Other Defense	2.3	1.7	1.3
Totals	100%	100%	100%

Source: Aluminum Co. of America.

(such as engine blocks and heads, brake drums, radiators, bumpers, trim, mufflers, tailpipes) and construction (such as siding, roofing, shingles, farm roofing, curtain walls, ductwork, bridges, and road signs). Both markets are the largest now. Says Mr. West: "We are just beginning to scratch the surface of the construction market." Producers echo that about automotive and point to the potentials offered by the aluminum engine block.

Technology—Say Reynolds: "A great deal of research is being conducted to improve metallurgy, coatings, anodizing, and alloys. Development of the high silicon alloys has moved automotive casting uses much closer to reality."

Says Derek Richardson, vice president, aluminum sales, Olin Mathieson Chemical Corp.: "Progress has been made in developing tougher, higher strength, weldable alloys. This, together with improved welding techniques, will increase aluminum usage in various construction fields."

F. J. Close, Alcoa vice president, lists four new alloys his company has developed this year: 1. A sand casting alloy for aircraft and heavy construction equipment. Advantages: High strength, good ductility. 2. An aluminum-lithium heat resistant alloy for supersonic aircraft. 3. A sheet alloy for automotive and appliance decorative trim which has a "superbright anodized finish." 4. A diecasting alloy for engine connecting rods.

Combinations — Here's another growing application: Aluminum used with other metals. Alcoa has developed a process for bonding aluminum and stainless steel. The company says the process offers possibilities for other combinations, including carbon and alloy steels and copper.

1959 — Next year, the industry will bring in over 200,000 tons of new primary capacity. That plus an end of put rights will pressure aluminum sales people to bring in more business. Producers believe they can meet the challenge. Kaiser, for example, estimates 1959 consumption will hit 2.25 million tons.

By 1965, domestic consumption will have climbed to 4.2 million tons, more than twice that pegged for 1958, says Kaiser.

Beryllium Production Soars

Its potential is promising, but problems of cost, toxicity, ductility, and scarcity will have to be solved. The metal's low neutron cross section makes it valuable for nuclear uses

ABOUT 75,000 lb of beryllium metal will be produced for the Atomic Energy Commission in 1958 (double 1957's output). Another 200,000 lb will be contained in beryllium alloys produced this year and other smaller quantities will be turned out for various uses.

Major U. S. producers are Brush Beryllium Co., Cleveland, and Beryllium Corp., Reading, Pa. Major uses of the metal are in atomic reactors, for guidance system parts, and as an alloying agent.

Properties—To understand beryllium's present and potential uses, it's necessary to examine its characteristics. The metal's specific gravity (1.84) approaches that of magnesium. Its melting point (2372° F) is much higher than magnesium's. Beryllium's atmospheric corrosion resistance at low temperatures is close to aluminum's and its electrical conductivity is 40 to 44 per cent that of copper.

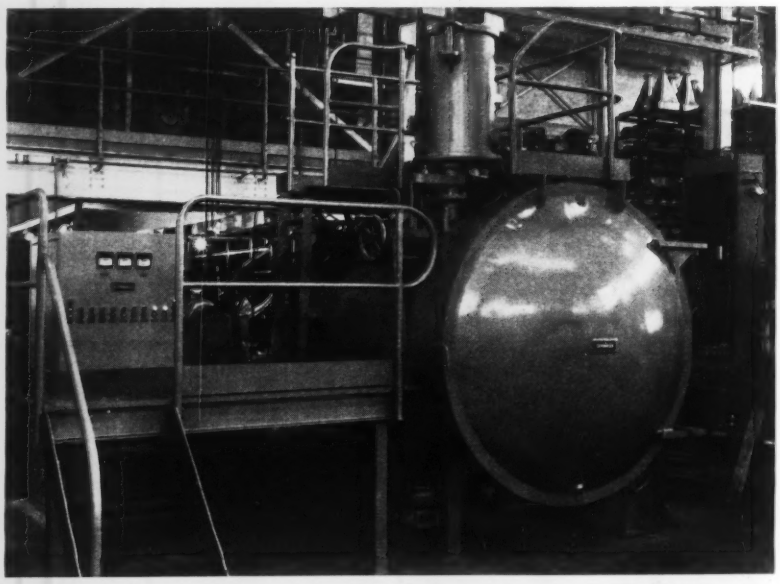
It has about the same hardness as mild steel and is a good neutron source. Its neutron cross section (9 millibars) is lower than zirconium's. Beryllium is 17 times more permeable to x-rays than is aluminum.

Nuclear Application—Because of its extremely low cross section, the metal is used as a reflector or moderator. In Europe, beryllium has been used in reactors as an additive to magnesium alloys for fuel element cladding.

Small quantities of beryllium are used as beryllium-polonium neutron sources. Other AEC end uses of the metal are classified.

Beryllium Alloys—One of the metal's chief uses is in production of alloys. The best known is beryllium copper (the master alloy contains about 4 per cent beryllium). These copper alloys have good strength, are easily machined, are stable under load, and are more stable at high temperatures than many other copper alloys.

A broad range of properties is



This Stokes vacuum melting furnace is in Beryllium Corp.'s Hazleton, Pa., plant. Capacity is about 120 lb of beryllium. It is equipped with a vacuum locked bulk addition system, permitting recharging without disrupting the vacuum

attainable by changing the beryllium content and heat treating procedures. Beryllium copper is used for: Nonsparking tools, electrical contacts, industrial diamond settings, surgical instruments, hypodermic needles, radios, altimeters, telephones, and guidance device components.

Beryllium alloyed with nickel, zinc, magnesium, or aluminum doesn't yet have any commercial interest.

Potential Uses — Other applications being investigated include: Parts for x-ray cameras, high speed cameras, aircraft brake parts, underwater instruments, accelerator targets, as a getter material for use in heated liquid metals, gas turbine engine parts, high frequency electronic parts, aircraft instruments, and aircraft structural components.

Also being considered are beryllium additives to aluminum, zinc, and other alloy melts as a deoxidizer; beryllium additives to aluminum baths for dip coating of steel. Other uses could be found in high velocity testing equipment, rotor shafts in refrigeration equipment, and rocket engine components.

Since beryllium has an extremely high heat yield rating (29,000 Btu, surpassed only by hydrogen's 52,000), its use in high energy fuel has been investigated (but so far only in laboratories).

Availability — Beryllium is considered to be scarce. The U. S. Bureau of Mines says it constitutes about 0.0005 per cent of the earth's crust and is found in over 30 minerals. (Comparison: Boron makes up about 0.001 per cent of the earth's crust.) Beryl ore is the only present source of beryllium.

Annual consumption of beryl ore is about 6000 tons. In 1954, the Bureau of Mines reported: "Future beryl supply prospects appear favorable. Estimated reserves in Brazil (largest beryl producing country) have been increased. Beryl reserves in North Carolina are estimated at 823,000 tons, nearly three times the amount formerly estimated." Argentina and South Africa also have large reserves.

The bureau is conducting metallurgical studies to develop methods of recovering byproduct beryl from spodumene mining operations.

Problems—Two major drawbacks will have to be overcome before beryllium can realize its potential. Current grades are not completely ductile. This prevents the economic quantity fabrication of beryllium by conventional metalworking techniques.

Another barrier to wider use of the metal is the health hazard associated with improper handling. There is no question but that a toxic problem is present, but government installations and an increasing number of private firms have proved that proper handling can eliminate it.

Cost — Beryllium is selling for about $47 a pound for billet and $65 to $80 a pound for hot pressed and rough machined block. The price has been dropping as demand has increased. In the late 1940s, beryllium sold for $100 to $150 a pound. Estimates are that a 200,000 lb increase in annual demand for the metal would mean another 15 to 20 per cent reduction in price.

A much larger cut could be made by improvements in fabrication. Nearly all beryllium metal parts for nuclear reactors are produced by powder metallurgy. Result: The vacuum cast billet must be lathe chipped, and subsequently ground into powder which is hot pressed under vacuum into blocks. The blocks, in turn, are machined. The procedure is long and expensive, but today's only known method.

Beryllium Oxide—Entirely apart from the metal is the oxide, a refractory material which also has nuclear applications; prime interest is as a moderator and reflector. Its melting point is twice that of the metal.

New Industry Up in L. A.

Local investment in new and expanded plants in the Los Angeles metropolitan area is within 0.8 per cent of what is was in 1957. Reason: A sharp July upturn.

August figures will push 1958's total even higher than last year's, predicts H. C. McClellan, chairman of the industrial committee of the Los Angeles Chamber of Commerce.

Mr. McClellan said July totals were nearly four times the comparable 1957 figures and 33 per cent above this June's mark.

Warehouse Opens

Clark Equipment's new outlet uses IBM equipment, teletype lines to speed delivery

ONE of your best sales tools is a reputation for providing fast, efficient service on spare parts and emergency repairs.

That philosophy was behind Clark Equipment Co.'s planning for its new Central Parts Div. Warehouse in Chicago.

Electronic data processing equipment speeds order processing and keeps daily tabs on inventories of 60,000 to 70,000 different parts. A 13,000-mile private wire network links the warehouse (and all Clark plants) with 95 construction equipment and industrial truck dealers.

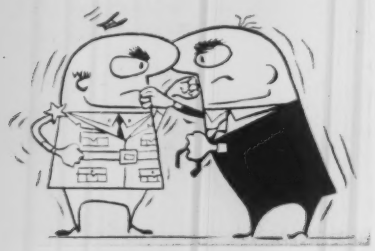
Two types of warehouse orders are handled:

1. High priority emergency orders. If a customer needs a part the dealer doesn't have in stock, the dealer puts the order on the private wire. At the warehouse, there is a special receiver which handles emergency orders. The part editor verifies identification, eliminating possible error in the part number.

IBM equipment then determines availability and warehouse location of the part and writes the "pick ticket." When more than one part is involved, the IBM sorts the parts by location so the person picking them up never has to retrace his steps. Shipment can go by air, truck, rail, or bus—whichever is fastest—within 2 hours or less.

2. Replenish stock orders are the second type. Each dealer has one regular shipping day out of every seven. Over 75 per cent of all orders are shipped on regular dealer shipping days.

"The new warehouse stocks over 4.5 million parts, giving us about 92 per cent availability of anything we've ever built," says Vine Cooke, division manager. "Combined with dealer inventories, we come as close as possible to 100 per cent availability. For example, orders have come in for parts for older equipment which we don't normally stock. By sending a message to all dealers, invariably someone will have the part in stock and can make immediate shipment."



The Defense Issue: Who Is Right?

WE HAVE HEARD that the U. S. lacks adequate aircraft to fly troops to the scene of a brushfire war; we are warned that the Soviet Union will have operational ICBMs years ahead of us. The Military Applications Subcommittee of the Joint Atomic Energy Committee says the Russians can have a nuclear submarine fleet larger than ours by the middle of the next decade.

The question: To what extent are those claims dictated by politics? (They come largely from Democrats.) Answering the point about ICBM production, Sen. Leverett Saltonstall (R., Mass.), second ranking Republican on the Armed Services Committee, notes: "Figures which have been used show 130 U. S. ICBMs in 1964, as compared with 2000 Russian ICBMs. This is a comparison of two entirely different things. The 130 U. S. ICBMs represent only our developmental objective. The Russian figure is based on estimates of the maximum number they might produce once in full production."

Top Pentagon officials generally back up the senator's point of view. Some hints that all is not as well as the administration contends come, however, from just released Navy reports.

Submarine Program for '60s Revealed

From 1960 to 1970, the Navy plans to build 50 nuclear-powered attack submarines (those designed specifically to hunt down and kill enemy subs) and 35 Polaris-firing subs. With the five of the Polaris type now planned and the 15 attack subs to be on hand in the next few years, we would have a fleet of only 105 nuclear subs by 1970.

To expedite the program, authorities naturally are recommending more money, but they also want a realignment of naval management techniques. Two plans being advanced with the backing of some top men on Capitol Hill: Funding of the Polaris subs outside the Navy's regular shipbuilding program, so that they are on the same level as the Strategic Air Command's budgets; and a management setup for antisubmarine warfare outside the traditional Navy Bureau establishments. Thus the Navy is being pushed into a weapon system management program of the air force type.

We will hear more about the defense issue in this fall's election campaigns. It seems certain, despite progress we have made since Korea, that we are not adequately regaining the lead in arms development which the Russians won after World War II.

Machine Tool Investigations Ahead

Look for hearings this fall before two congressional committees on the problems of the machine tool industry. The Senate Small Business Committee and the House Appropriations Committee are concerned about surplus tools and imports.

Meanwhile, officials of the Office of Civilian & Defense Mobilization are a little more optimistic about surplus tools owned by Uncle Sam. The President approved an appropriations bill last week giving the General Services Administration most of the money it wants for financing the transfer of surplus tools into the National Industrial Equipment Reserve. Reports from the Department of Health, Education & Welfare show more tools were allocated to schools in 1958's first half than during all of 1957.

Much Small Business Help Here?

In a briefing on the new Small Business Investment Act, Wendell Barnes, small business administrator, warned that there will be no large jump in the number of business formations. The bulk of the investment companies formed will be affiliates of well-established lending institutions, he said. Most of the money they invest will go to old firms with good credit.

The new investment companies' job will be to carry such businesses to the point where they can do their own public financing. Loans and investments will be on the same standards as regular SBA loans.

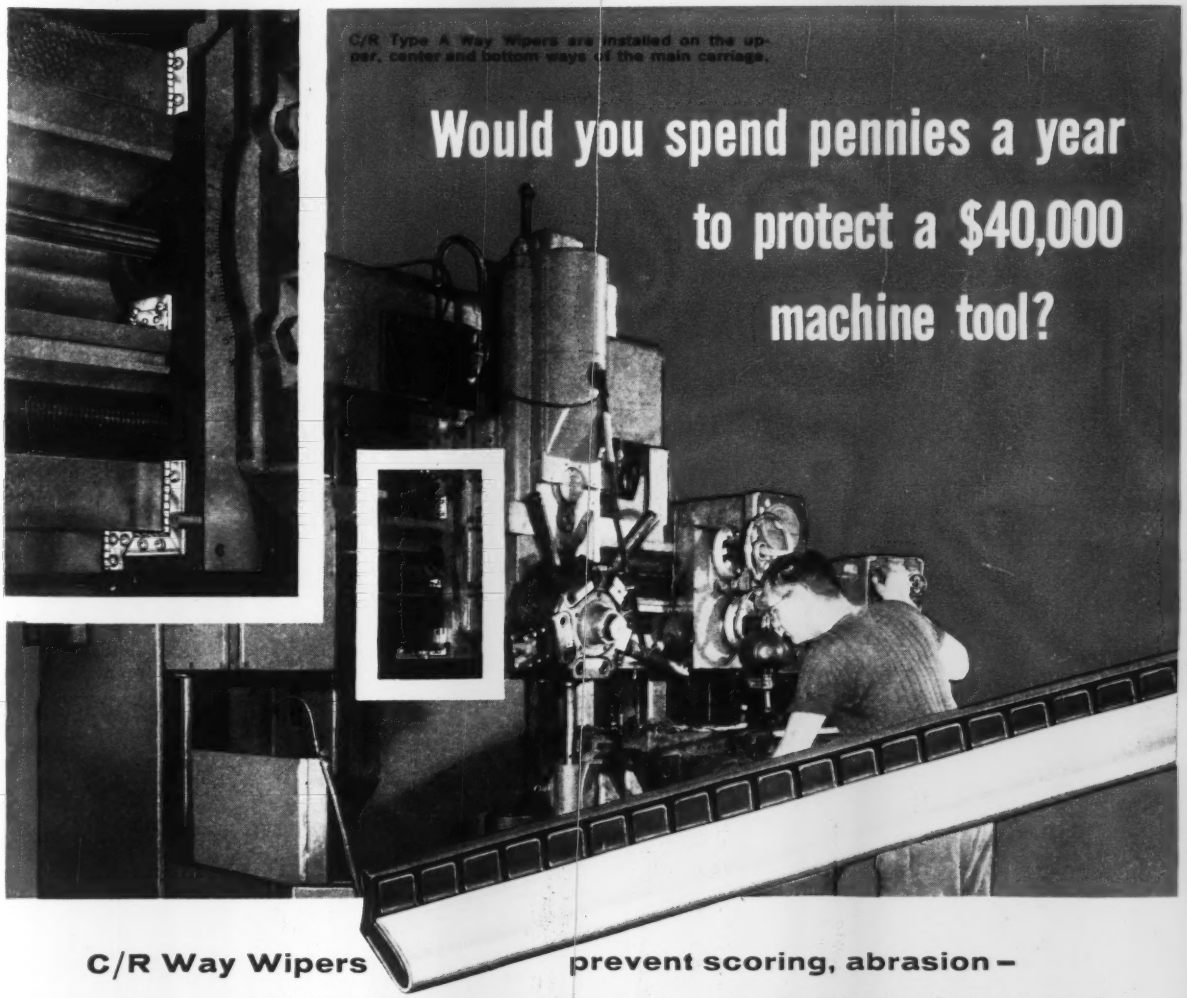
Ike Evaluates Pension Disclosure Bill

"I have approved the Welfare & Pension Plans Disclosure Act because it establishes a precedent of federal responsibility in this area. It does little else," commented President Eisenhower as he signed the act, heralded as one answer to labor corruption in the welfare fund field.

Stating that the act will need "extensive amendment" at the next session of Congress, the President cited these big drawbacks:

1. It requires only "summary" statements of the financial operations of the plans, "making it possible to conceal many abuses."
2. No government agency is authorized to interpret the bill; "the chaos that will result is obvious."
3. It is "unrealistic" to rely on employees themselves to force compliance through court proceedings.
4. The Labor Department still lacks the right to investigate the reports filed.
5. The act does not deal with embezzlement or kickbacks, "the most flagrant abuses" of some welfare plans.

Outlook for a better bill next year: Dim.



Would you spend pennies a year to protect a $40,000 machine tool?

C/R Way Wipers prevent scoring, abrasion – save costly hours of master mechanic maintenance

The 36-inch vertical milling machine shown above costs more than $40,000 but it costs only pennies per year to protect its ways with C/R Way Wipers. And they pay for themselves many times over. One user, for example, has eliminated *all* way care and saved 1140 hours of master mechanic maintenance since installing C/R Way Wipers on 6 vertical milling machines. And, after 4560 hours of operation per machine, ways show no signs of scoring or galling. You may be able to realize similar savings in reduced downtime and maintenance in your own shop.

C/R Sirvene (synthetic rubber) Way Wipers are precision molded for accurate fit. They wipe ways clean of dirt, chips, fine abrasives, even water emulsions. They will not trap harmful materials, will not mark or smudge ways. They are easily installed on flat ways, side rails, angles, columns and hydraulic rams, and will save many times their original cost.

For complete details write for our Bulletin WW-100.

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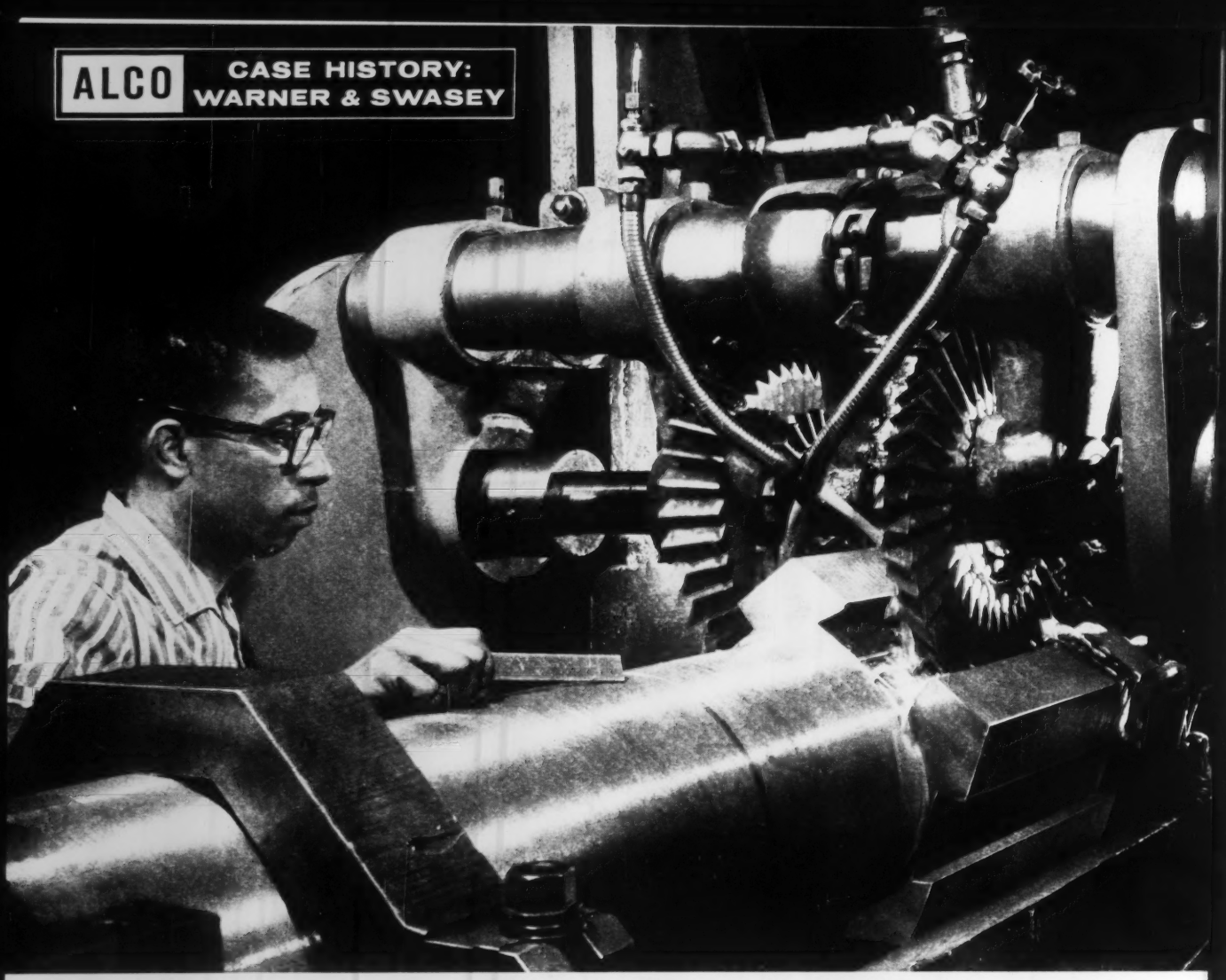
In Canada: Manufactured and Distributed by Chicago Rawhide Mfg. Co. of Canada, Ltd., Brantford, Ontario. **Export Sales:** Geon International Corp., Great Neck, New York.

Other C/R Products: *C/R Shaft and End Face Seals • Sirvis-Conpor mechanical leather cups, packings, boots • C/R Non-metallic Gears*

SIRVENE C/R DIVISION

CHICAGO RAWHIDE



With ALCO's Hi-Qua-Led Steel forgings, Warner & Swasey reduced time for straddle-mill dovetailing of tool holder's pentagon shape by 71%.

MACHINE TIME CUT 33%, TOOL LIFE TRIPLED WITH ALCO'S HI-QUA-LED® STEEL FORGINGS

With open-die forgings of ALCO's special free-machining Hi-Qua-Led Steel, Warner & Swasey has reduced machining time 33% on a pentagon-bar tool holder for their automatic chucking machine. Time for the various milling operations has been reduced as much as 71%, and turning time 33%.

Warner & Swasey has found that in every operation the use of Hi-Qua-Led forgings has meant savings in tool life, machining time or both. In the trepanning operation, run at the same speed as before, the life of expensive tools has increased up to three times.

ALCO's Hi-Qua-Led Steel forgings have unique advantages of machinability, while maintaining the physical characteristics of regular forgings of the same grade. Cost is just a few cents more. Circular shapes, forged and rolled, range from 18 to 145 in. OD; open-die shapes from 1000 to 30,000 lbs and up to 40 ft long; mandrelled ring forgings up to 60 in. wide.

Contact your nearest ALCO sales office for full information on the many advantages of Hi-Qua-Led Steel forgings, or write ALCO Products, Department 154, Schenectady, New York.

ALCO

ALCO PRODUCTS, INC.

NEW YORK

SALES OFFICES IN PRINCIPAL CITIES

LOCOMOTIVES • DIESEL ENGINES • NUCLEAR REACTORS • SPRINGS • STEEL PIPE • FORGINGS • OIL FIELD EQUIPMENT

Consumer-style selling of an industrial product helps as . . .

Bailey Builds Sales

A CONSUMER selling technique will be used by Bailey Meter Co. to broaden the market for its portable combustion analyzer. The Cleveland manufacturer will merchandise its 25-lb unit on a mail order basis, offering a fixed price and a money back guarantee if the buyer isn't satisfied.

Exception—Most of its products are sold in consultation with buyers. Company officials decided a less conservative approach would win increased orders for the analyzer, one of the few off-the-shelf items in its product line. It requires no application engineering and can be stocked for quick shipment. Standard delivery time is two to four weeks.

Says R. R. Swain, manager of the company's iron and steel industry sales: "We're trying to create the best opportunity for potential users to discover values of optimum combustion efficiency. By making a special offer at an established price of $980, and refunding the purchase price if the user doesn't realize advantages within two months, we hope to reach thousands of metalworking plants we could not possibly approach personally in a limited time." The equipment was formerly sold direct by the company's field engineers.

How It Works—The instrument continuously measures percentages of oxygen and combustibles in furnace atmospheres and waste gases. For example, it's placed near the discharge end of a furnace where it determines whether any unburned fuel is escaping and whether correct amount of air is present. Metalworking plants are the largest buyers. Applications include heat-treating furnaces, open hearths, soaking pits, and boilers.

Timken Buys Jet Plane

The first U. S. jet plane designed for business executive travel has been delivered to Timken Roller Bearing Co., Canton, Ohio, by Youngstown Airways Inc., Youngstown.

The plane, a Morane Saulnier 760, can carry four passengers at a top speed of 410 mph. It has a range of 1000 miles and is powered by two single-stage jet engines (each with 880 lb of thrust). Either aviation kerosene or 100/131 octane aviation gasoline can be used as fuel. With a landing speed of 95 mph, it can land at airports with only medium length runways.

The aircraft was built in Paris, France, by Morane Saulnier Co. It was assembled in New York and flown to Youngstown.

July Shipments: Orders Up

Manufacturers' shipments and new orders were up in July. Inventory liquidation continued but at a slower pace, reports the Business Economics Office, Department of Commerce.

Sales were $24.7 billion, an increase of 2 per cent over June's (after seasonal adjustment). Both durable and nondurable goods industries advanced. July's new orders totaled $25 billion, coming mainly from the nondurable goods industries. Durables reported small, offsetting changes.

Inventory book values were $49.5 billion, off nearly $4.5 billion from 1957's. Inventories declined $400 million in July.

Unfilled orders were up slightly, totaling $46.5 billion at July's end, compared with $59 billion at the end of July, 1957.

Ideas Earn $14 Million

Industrial and government workers shared $14 million in awards for their suggestions in 1957, the National Association of Suggestion Systems, Chicago, reports.

Some 6.6 million employees of member companies submitted 1.7 million ideas through formalized programs. Some 434,375 were adopted, with payment of $13,956,-841 to participants.

Largest single award reported by NASS: $23,495 to a screw machine operator at Eastman Kodak Co., Rochester, N. Y. His idea: A combination machine to eliminate separate production operations in manufacture of a camera.

An Auto Strike?

What Metalworking Men Think

"I . . . feel there will be a strike."

John C. Cercone, general manager of sales, Pittsburgh Steel Co., Pittsburgh: "I hate to think of what a strike would do. In the fourth quarter, about 60 per cent of our shipments normally go to the automotive industry. I personally feel that there will be one, sometime after Sept. 15. Mr. Reuther knows automakers want to produce cars, but the companies figure they can turn out 5.5 million cars in nine months if they have to."

". . . we would indirectly be affected."

Frank E. Whyte, general purchasing agent, SKF Industries Inc., makers of bearings and transmission equipment, Philadelphia: "We expect to experience no immediate effect on our sales in event of a strike. If a strike lasted as long as two months, for example, its effects would probably be felt by the entire economy, and we would indirectly be affected even though we are not major suppliers to the passenger car industry."

". . . Reuther will be forced to back down."

James A. Kyffin, director of purchases, C. A. Norgren Co., Englewood, Colo., makers of filters, lubricators, regulators, and valves: "I seriously doubt that there will be an auto strike. The economy just couldn't take it and for that reason I think Reuther will be forced to back down.

"The threat of a strike has not noticeably affected our business, but a strike would affect us tremendously. We don't supply the auto industry directly, but we do supply those firms which do."

". . . a Ford or GM walkout would bother us."

Chester A. Sellin, general manager, Reliance Div., Massillon, Ohio, Eaton Mfg. Co., maker of valves, engine parts, valve lifters, brakes: "I just don't know whether there will be a strike. I don't think Reuther wants one. If he did, he would have called it before now.

"We haven't felt any results from the threat of an auto strike, but we would be affected should a strike occur. The amount of damage done to our business would depend on who goes out. A strike at Chrysler wouldn't bother us as much as a walkout at Ford or GM."

Will there be a walkout? Has the threat of one affected your business? If it does come, how badly will you be hit? STEEL posed those questions to a cross section of metalworking's managers in administration, production, engineering, and purchasing. Here's what they report

"The strike threat has had no effect so far."

John G. Schaeffer, manufacturing manager, General Metals Corp., producer of malleable iron castings, Oakland, Calif.: "An automotive strike wouldn't affect our sales as much this year as it would in a better sales year. In 1958, shipments to automakers have been only about 50 per cent as large as they were in 1957. They make up about 15 per cent of our total shipments this year. The threat of a strike has had no effect on our order receipts so far."

". . . chances are against an auto strike."

Alvan Markle, director of purchases, Walworth Co., New York, maker of pipe and valve fittings and piping: "In my opinion, chances are against an auto strike. Present economic conditions and recent history indicate that the union wants to avoid it if possible.

"While the threat of a strike has not measurably affected our business, we would be able to feel the results of a strike if it should come. We don't expect to be hurt greatly, though, even if the UAW should walk out."

". . . the union can't afford a strike."

Fred C. Valentin, manufacturing engineer, Worcester Pressed Steel Co., Worcester, Mass., maker of pressed steel parts, cylinders, and valves: "I don't believe there will be a strike. I think the union is just threathening and that Reuther will back down before he calls a strike. The union simply can't afford to strike with times the way they are.

"All the talk about a strike hasn't affected us. We do some work for the auto industry and orders have come in just about as might be expected. If there is a strike, it will slow us down, but over the year, I don't think it would hurt us much."

"Strike chances are less than . . . in some past years.

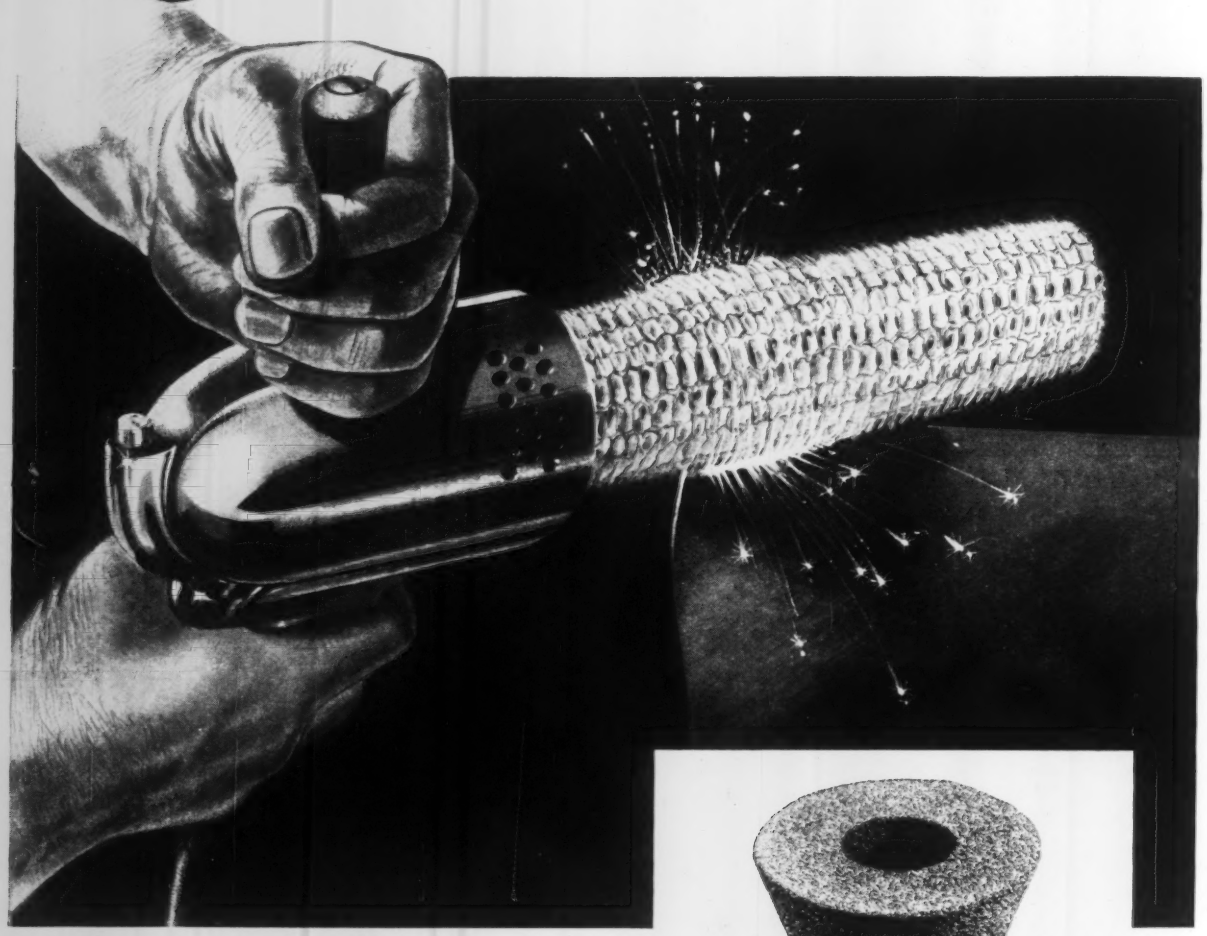
Richard Kaiser, plant engineer, Dodge Mfg. Corp., Mishawaka, Ind., maker of power transmission equipment: "My guess is that chances of a serious strike are less than they have been in some past years, as automotive management is in a better position. We have proceeded with plant improvements, including foundry mechanization, despite dips in sales this year. Our plans for further improvement wouldn't be stopped by an auto strike."

"Wildcat walkouts indicate there will be a strike."

Albert S. Burgoyne, vice president of manufacturing, E. W. Bliss Co., Canton, Ohio, machinery maker: "I don't really know whether there will be a strike. The wildcat walkouts seem to be a pretty good indication that there will be, but it seems to me it would be stupid for the UAW to strike.

"As far as the threat of a strike is concerned, our business is down so far we couldn't tell it even if it was having an effect on the economy. We wouldn't expect a strike to affect our business much directly."

US RUBBER GRINDING WHEELS



Grinding with a corn cob?

Inset shows actual U. S. Lo-Temp Cup Wheel.

It's a fact! In the new U. S. Lo-Temp Cup Wheel, ground-up corn cobs are blended into the batch with some remarkable results:

Greater wheel porosity, thereby preventing the wheel from burning the metal, even at top speeds • greater uniformity within the wheel – and from one wheel to another • greater strength and resistance to wear, therefore, longer life and wheel economy • greater resistance to centrifugal stress.

As any grinding wheel operator will quickly discover, this amazing new "corn-fed" U. S. Lo-Temp Cup Wheel permits him to do a more craftsmanlike job more quickly, more surely, more safely.

The U. S. Lo-Temp is just one of several new grinding wheel developments coming from U. S. Rubber. Get in touch with wheel specialists through U. S. Rubber, 312 N. Hill St., Mishawaka, Indiana, your local "U. S." District office, or by writing us at address below.

US RUBBER

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

'58 Options Show Changing Demand

Per Cent of Total Output	V-8 Engines	Automatic Transmissions	Power Steering	Power Brakes
1958	77.5%	77.5%	41.0%	29.4%
1957	82.4%	79.2%	32.6%	27.9%
1956	81.0%	73.6%	26.7%	23.6%
1955	78.4%	62.9%	21.4%	21.0%

All figures based on model year installations. 1958 figures based on preliminary model year output of 4,280,217. Adopted from Ward's *Automotive Reports*.

Wanted: Economy, Easier Handling

RECESSION YEAR car buyers have reversed the postwar trend to V-8 engines and automatic transmissions. The percentage of 1958 model cars equipped with those items has dropped behind 1957 levels. But a surge in power steering installations seems to indicate drivers want help in handling Detroit's heavier cars.

The reversal confirms Detroit's growing belief that more buyers want cars that are cheaper to run. Next year, the industry will emphasize economy engines in an attempt to cater to this demand.

Here's One—Pontiac has already announced that it will make an economy V-8 next year. The engine is rated at 215 hp and has an 8.6:1 compression ratio. It will use regular gasoline. Pontiac's smallest V-8 this year has 270 hp and a 10:1 compression ratio. S. E. Knudsen, Pontiac's general manager, claims: "The economy engine will perform about the same as our larger engine at town speeds; at top highway speeds, performance will be slightly less." Judging from his remarks, the engine will offer 19 per cent more economy in operation than the larger 1959 V-8.

Here's How—Typically, Pontiac's largest powerplant has higher horsepower (up to 300 from 285) this year. The engines were committed to tooling when the horsepower race still was blooming. The economy jobs that will be announced are late modifications.

Chevrolet, Ford, Plymouth, Dodge, Rambler, and Studebaker now offer 6-cylinder engines. So most of the economy moves in next year's options will involve changes in present V-8s. Pontiac has done it by using a different carburetor, manifold, cam, and differential.

Transmissions, Too—Even though optional installations have dropped, carbuilders have some comfort: Almost every 1958 car buyer who ordered a V-8 engine also bought an automatic transmission. Some 3.31 million automatics and 3.28 million V-8s have been installed in 1958 model cars. Until this year, there was a lag in the number of persons who wanted both an automatic shift and a V-8, even though the two work best together.

The development can scarcely be credited to the fact that automatics have become standard equipment on more cars. The only additions to the list in 1958 (Buick's Limited, Mercury's Park Lane, and Edsel's Corsair and Citation) weren't on the market in 1957. De Soto's Fireflite dropped the automatic from its list of standard equipment.

Keep Pace—Several of the new models will have slightly modified automatic transmissions, but the changes are aimed at smoothing out the shifting patterns and cutting costs. Savings in fuel economy will

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News from the Previews

OLDSMOBILE—Elimination of side trim panels plus complete restyling has given next year's car a new look. Jack F. Wolfram, Oldsmobile's general manager, says his division expects to get 8 per cent of the 5.5 million car market General Motors executives are predicting for 1959. This year, Olds is leading the medium price field. At the half, it was accounting for 7.1 per cent of the total market and Mr. Wolfram expects this figure to hold for the rest of the year.

The division's three series will be continued. Hardtop station wagons have been dropped, but Olds will offer two additional body styles in all series—the Holiday Sportssedan and a two-door Holiday Scenicoupe.

Mr. Wolfram reports that 50.2 per cent of 1958 production has been in Oldsmobile's economy model (the Dynamic 88), compared with 46 per cent last year. Production of 1959 cars started last week. Models will be introduced Oct. 3.

PONTIAC—S. E. Knudsen, Pontiac's general manager, says his division wants 7 per cent of next year's market. Like other GM divisions, Pontiacs have been completely restyled. Glass area has been increased, height lowered, and body lengthened. Its 1959 cars will be 9 in. longer than '58s and will come in 17 body styles, vs. 14 this year.

Mr. Knudsen also reveals that Pontiac will schedule 9 to 10 per cent of initial production for the 215-hp economy engine. Fuel injection has been dropped, but full air suspension will be available.

AMBITIOUS—GM's three medium price car divisions forecast taking 22 to 23 per cent of the 1959 market. Traditionally, medium price cars account for 30 to 35 per cent of industry sales. If Buick, Pontiac, and Oldsmobile attain their goals, a maximum of 13 per cent of the market will be left to be split among the five or six other contenders in that price field.

be secondary. Even so, the ratio of V-8s to automatics should continue until smaller economy cars arrive.

The small cars will be powered by 6-cylinder engines and will use clutch shifts as standard equipment. But automatic transmissions will be offered. Ford has developed an inexpensive, two-stage shift for its small car. (It should be available on some 1959 models, too.)

Power Steering, Brakes Gain

Buyers want handling ease along with more operating economy. The percentage of power steering installations has taken an 8.4 per cent jump this year. Power brakes are up 1.5 per cent.

Unit volume is down. Some 6.21 million cars were built in the 1957 model run and 2.2 million were equipped with power steering; 1.7 million had power brakes. This year's model run totals 4.28 million cars. Some 1.7 million have power steering; 1.2 million, power brakes.

Even though power steering costs an average of $60 more than power brakes, its need is obvious to any driver who tries to jockey 4000 lb of automobile into a tight parking space. Both accessories are standards on luxury lines and on some of the top medium price series, but it will be some time before they reach that category on all medium price cars.

Ford's Determined To Learn

You may be one of the lucky 400 members on a consumer panel Ford Motor Co.'s setting up to prove that automakers try to design cars customers want.

The company has asked Dr. George H. Gallup, public opinion pollster, to select the king-size panel for its consumer conference on Oct. 8-9 at Dearborn, Mich. Chamber of Commerce officials will choose candidates from local service clubs in cities selected by Dr. Gallup.

The men will be briefed on facets of designing, engineering, and building an automobile. Then they'll be assigned a 1959 car for a month of testing and reporting. (A Ford spokesman says reports will be confidential.)

Henry Ford II, president, asserts: "One principal reason for the creation of the panel is to symbolize the amount of consumer research done by the industry. We also believe this panel is a direct answer to criticism received from some quarters that the industry does not plan cars with the public in mind."

Exhaust Notes

• McCord Corp., Detroit, has redesigned its replacement mufflers: Exhaust gases will be recirculated three times through the muffler shell. Purpose: To help eliminate cold spots which allow corrosive exhaust vapors to condense inside the muffler. The company now uses a heavier gage steel in its mufflers and is coating shells as well as heads with galvanized zinc.

• General Motors Corp. has established an Electronics-Instrumentation Dept. for its research facilities at the GM Technical Center, Warren, Mich. Albert F. Welch heads the department. It'll develop advanced instrumentation and help tech center personnel acquire data for research projects.

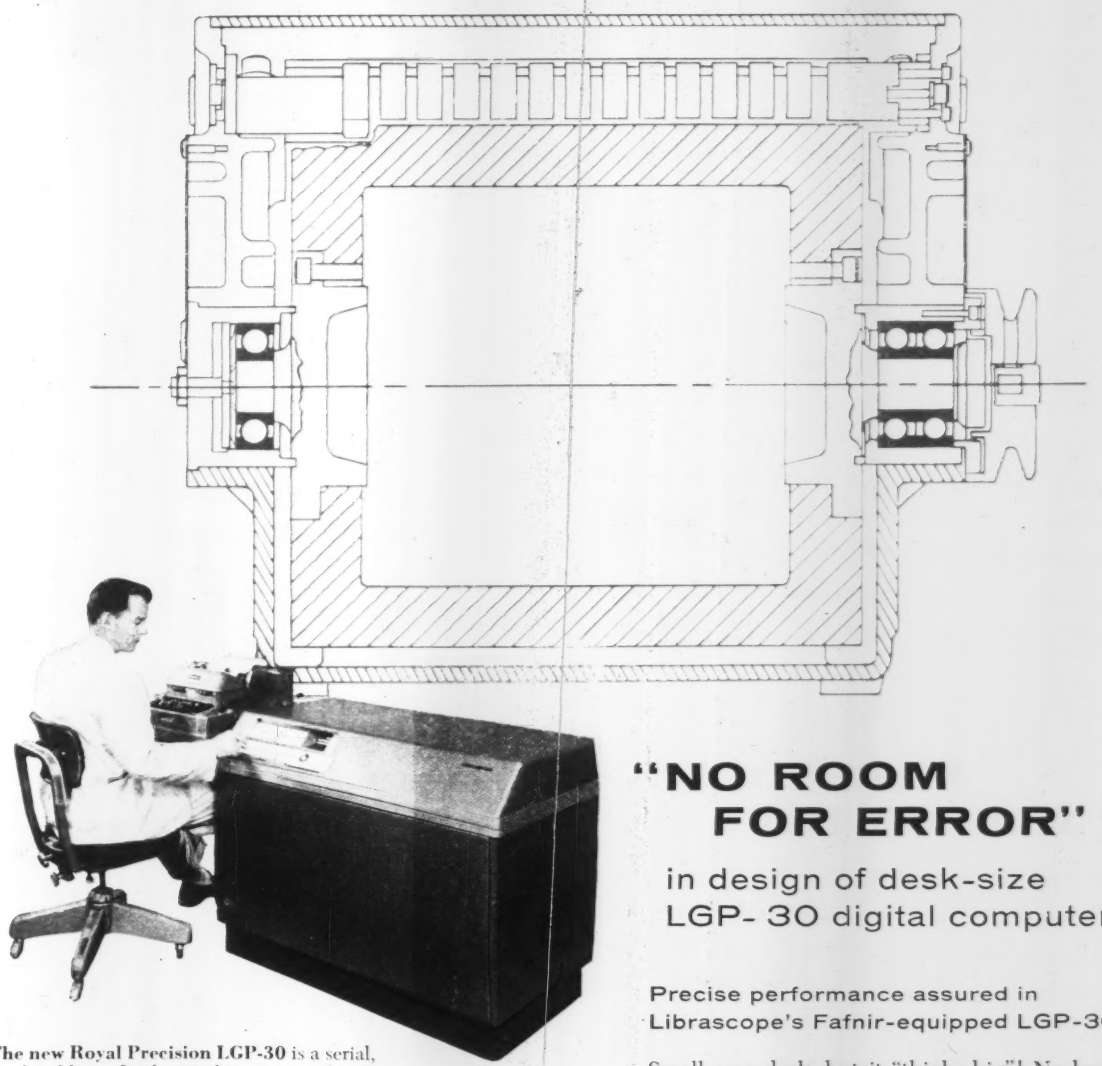
U. S. Auto Output

Passenger Only

	1958	1957
January	489,357	642,090
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
June	337,355	500,271
July	321,053	495,628
August	179,100†	524,354
8 Mo. Total	2,742,003†	4,392,871
September		284,265
October		327,362
November		578,601
December		534,714
Total		6,117,814

Week Ended	1958	1957
Aug. 2	62,846	119,323
Aug. 9	65,614	118,864
Aug. 16	59,677	117,598
Aug. 23	25,918	123,130
Aug. 30	16,192†	118,553
Sept. 6	25,000*	90,704

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.



"NO ROOM FOR ERROR"

in design of desk-size LGP- 30 digital computer!

Precise performance assured in Librascope's Fafnir-equipped LGP-30

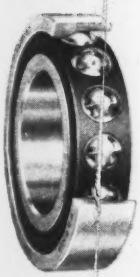
Small as a desk, but it "thinks big"! No less than 4096 words can be recorded on the magnetic memory drum of the new Royal Precision Electronic Computer LGP-30. Moreover, this compact unit, made by Librascope, Inc., a subsidiary of General Precision Equipment Corporation, can be rolled where it's needed and plugged into any conventional wall outlet.

At the heart of this versatile computer, Fafnir super-precision type ball bearings maintain the precise alignment and high sensitivity required of the drum component. Counterbored to take a wide range of thrust, and radial loadings, these bearings provide the rigidity, extremely close-running accuracy, and low torque essential in this exacting application.

Fafnir's contribution to the development of the LGP-30 is another case history example of the high caliber and comprehensive scope of Fafnir design engineering services available to *you*. Take advantage of it when you have a bearing problem. The Fafnir Bearing Company, New Britain, Conn.

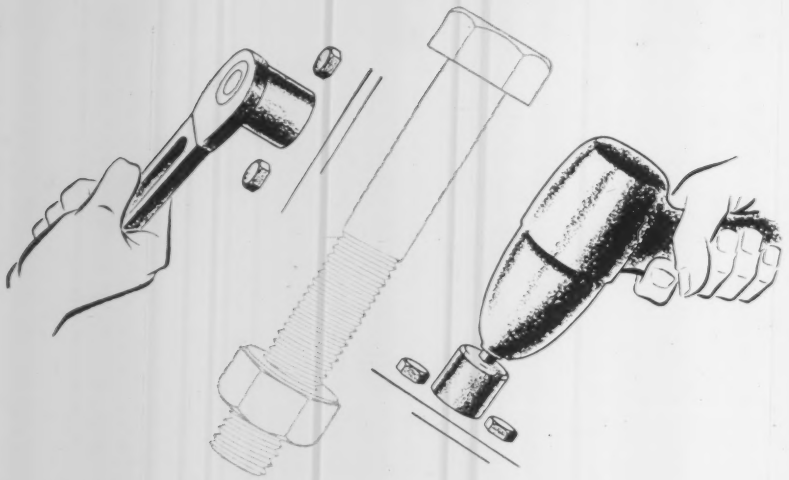
The new Royal Precision LGP-30 is a serial, single address, fixed point binary, stored program digital computer featuring simplified design and ease of operation. The unit is designed to make computer use economical and simple enough for more widespread application.

Fafnir Super-Precision Type Ball Bearings are used in duplex pairs, mounted back-to-back, at the pulley end of the LGP-30 memory drum, and singly at the opposite end. These preloaded, angular-contact bearings, equipped with composition or bronze retainers, are widely used in precision-built mechanisms.



FAFNIR
BALL BEARINGS
MOST COMPLETE LINE IN AMERICA

ECONOMIC FACTS ON FASTENERS



TIGHTEN UP FASTENERS TO TIGHTEN DOWN ON COSTS

- **Too little tightening wastes fasteners' strength—invites failures**
- **Proper application saves on material and production costs**

Go the limit in tightening bolts. You'll find this not only more economical, but safer too. For the strength of a rigid connection depends not on how strong a bolt is, but rather on how much *clamping force* it exerts when tightened.

Example: A bolt good for 20,000 pound load is tightened to just 5,000 pounds tension. Believe it or not, *joint* strength from that bolt would be only 5,000 pounds.

Case History: Earthmover's bucket kept coming loose. Bolts were upgraded progressively, finally to alloy steel and to 1¼-inch size . . . to no avail. Trouble was they still were not being adequately tightened. Bigger wrench, more torque and standard ¾" RB&W high tensile bolts stopped problem, saved money.

Obviously, the more of the fastener's strength you use, the smaller it can be. That's why RB&W High Tensile Bolts are such good buys. They have more strength to give. They cost less than the larger machine bolts or bright cap screws they can replace. Moreover, smaller bolts mean smaller holes to drill or tap. Smaller holes can often mean reduction in size of fastened members.

For a penetrating, productive value analysis of your fastening operations, make use of an RB&W Fastener Man. You may be surprised at the cost cutting his experience makes possible. Russell, Burdsall & Ward Bolt and Nut Company.

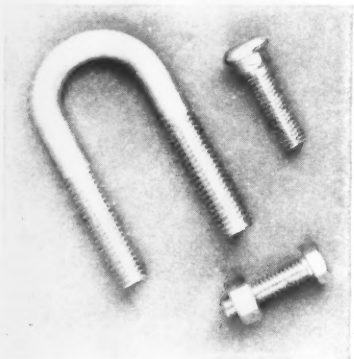
R B & W
114th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**

Economical lock nut

Staking opposite sides of these RB&W acorn nuts deforms threads for a positive grip. It also puts middle of nuts slightly out-of-round, for a spring tension locking effect. They're designed for applications such as outdoor furniture, where anchoring fasteners is more important than solid seating. Available in aluminum, steel, silicon bronze.

These all-metal nuts can also be furnished in double chamfered style. Since they lock with their middle threads, they can be turned onto screw from either side.

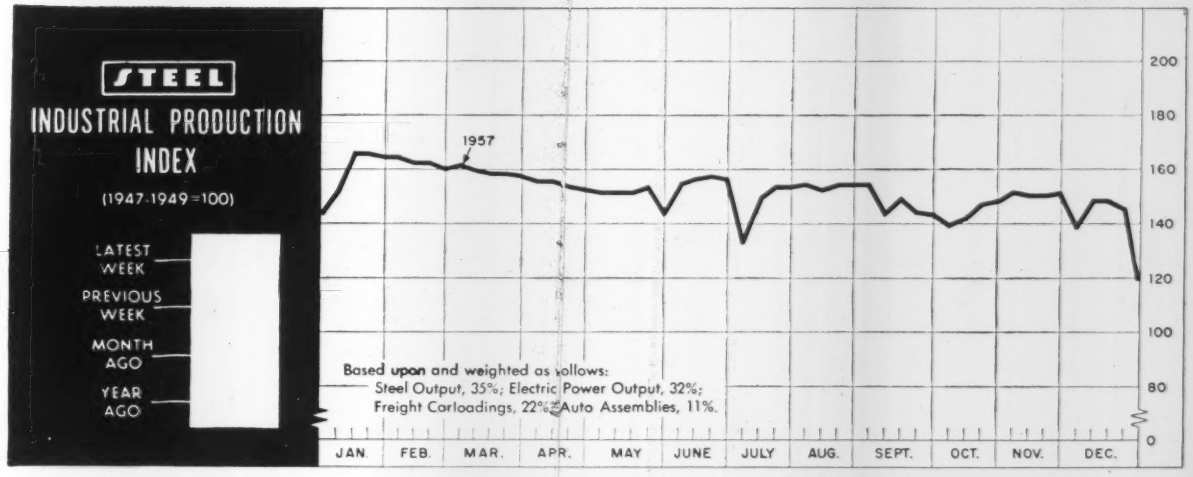


Silicon bronze fasteners combine desirable features

Silicon bronze offers the highest conductivity in fasteners able to withstand high stresses. It resists corrosion, stays free from season cracking, too. It makes ideal fasteners for electrical use where tensile strength is important; or for corrosive environments.

One of the first to develop such fasteners, RB&W cold works them for tensile strength and for clean, well formed threads that don't seize. Oval bolts, hex bolts and nuts, and U bolts available. Specials can be developed.

RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY



*Week ended Aug. 30.

Power Output To Hit Record in December

OUTPUT of electric power during the last four weeks has been running as much as 5.3 per cent ahead of the corresponding year-ago figures after trailing the 1957 totals most of the year. Industry experts think the uptrend will prevail through the fourth quarter, providing one of the most significant indications of the recovery.

The year-to-year gains since the last week in July have averaged about 4 per cent. One spokesman for the industry feels that the 4 per cent edge will hold the rest of the year. He points out that in May, industrial use of electricity was down 7.7 per cent, while residential was up about 8 per cent. Since then, industrial use has been creeping up on the year-ago figures, and residential has been holding its edge. (Air conditioning has not been as big a factor this year as it was in 1957.)

Watch Midwest—This trend is most clearly seen in the Central Industrial Division of the Edison Electric Institute's tabulations, where big industrial users—the steel mills and major metal fabricating industries—are the major consumers. From the last week in February to the first week in August, the division showed year-to-year minus signs. Since then, it has marked up plus signs. Officials of Cleveland Electric Illuminating Co. anticipate a continuation of this trend and feel that a new peak in output is a possibility before the year is over.

Built-in Growth—An official of the Edison Electric Institute says that this year industrial users will account for a smaller share of the total electricity used than they did in 1957. Last year, they took 51 per cent. The growth in consumption will come from a larger population, more homes, and rising commercial usage.

For the next six weeks or so, output will be in the normal postsummer slump. But industry officials look for the usual early November uptrend to materialize. Residential

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,707[1]	1,715	2,073
Electric Power Distributed (million kw-hr)	12,400[1]	12,486	12,147
Bituminous Coal Output (1000 tons)	8,115[1]	8,110	9,916
Crude Oil Production (daily avg—1000 bbl)	6,900[1]	6,875	6,766
Construction Volume (*ENR*—millions)	$397.8	$373.0	$436.5
Auto, Truck Output, U. S., Canada (*Ward's*)	26,955[1]	38,096	143,071
TRADE			
Freight Carloadings (1000 cars)	625[1]	634	745
Business Failures (Dun & Bradstreet)	272	262	260
Currency in Circulation (millions)[3]	$31,249	$31,295	$30,998
Dept. Store Sales (changes from year ago)[3]	+3%	+2%	+1%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$19,905	$22,679	$20,496
Federal Gross Debt (billions)	$278.1	$278.2	$273.7
Bond Volume, NYSE (millions)	$23.3	$24.1	$17.6
Stocks Sales, NYSE (thousands of shares)	13,578	12,270	9,998
Loans and Investments (billions)[4]	$94.8	$94.9	$87.0
U. S. Govt. Obligations Held (billions)[4]	$33.3	$33.7	$25.3
PRICES			
STEEL's Finished Steel Price Index[5]	246.65	246.65	239.15
STEEL's Nonferrous Metal Price Index[6]	198.8	199.4	213.7
All Commodities[7]	118.8[1]	118.8	118.0
Commodities Other than Farm & Foods[7]	126.0[1]	125.9	125.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

Large or small INDUSTRIAL CUT GEARS

- FURNISHED COMPLETE
- CUSTOM CUT FROM YOUR BLANKS
- HEAT-TREATED, CASE OR FLAME-HARDENED

SIMONDS GEAR produces a complete line of industrial cut gears in a full range of sizes from cast or forged steel, gray iron, bronze, Meehanite, rawhide or bakelite. Also heat-treated, case or flame-hardened carbon or alloy steel. Or, you may have your own gear blanks custom cut to your order. Same quality . . . same prompt service. Send us your requirements for quotation.

ALSO stock carrying distributors of Ramsey Silent Chain Drives and Couplings; and industrial V-belts.

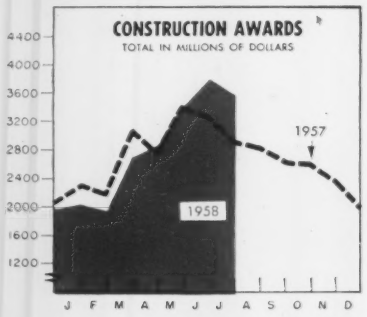
SPUR GEARS • BEVEL GEARS • MITRE GEARS WORMS • WORM GEARS RACKS PINIONS

SIMONDS GEARS

THE SIMONDS GEAR & MFG. CO.

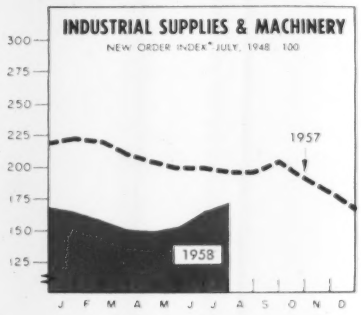
Liberty at 25th Pittsburgh 22, Pa.
Quality Gears for over 65 years

THE BUSINESS TREND



	Total 1958	Total 1957	Building 1958	Building 1957
Jan.	2,066.1	2,299.6	1,536.2	1,730.7
Feb.	1,953.4	2,161.0	1,478.1	1,695.5
Mar.	2,721.2	3,078.0	2,037.7	2,199.7
Apr.	2,881.0	2,776.4	2,198.0	2,069.7
May	3,402.6	3,399.5	2,470.3	2,416.8
June	3,819.6	3,243.5	2,340.3	2,341.5
July	3,607.1	2,900.7	2,633.5	2,247.6
Aug.	.....	2,818.0	.....	2,291.8
Sept.	.....	2,624.9	.....	2,092.2
Oct.	.....	2,613.8	.....	2,075.6
Nov.	.....	2,370.7	.....	1,808.5
Dec.	.....	1,982.3	.....	1,457.5
Totals	.....	32,268.4	.....	24,427.1

F. W. Dodge Corp.
Charts copyright, 1958, STEEL.



	1958	1957	1956
Jan.	163	221	190
Feb.	157	219	190
Mar.	149	210	190
Apr.	148	203	195
May	152	199	199
June	164	199	197
July	170	197	203
Aug.	...	197	211
Sept.	...	203	203
Oct.	...	192	206
Nov.	...	180	220
Dec.	...	167	218

*Seasonally adjusted.
Amer. Supply & Machinery Mfrs.' Assn.

usage will show a big gain during the first week in November as many cities go from daylight to standard time. Industrial usage also begins to spurt about this time in response to the auto buildup and pre-Christmas production of goods.

Big If—The only thing marring the view is the possibility of an extensive strike in the auto industry. CEI officials state that a strike of one week's duration would cut power output in the northeastern Ohio area by 5 per cent. If it were to go over that period, the cutback would become greater. Nationally, a big auto strike would push the figures below the corresponding 1957 levels again, especially as the effects began to trickle down to the steel mills and other suppliers.

Barring such a strike, the industry expects to break the 13 billion kw-hr barrier for the first time during the week before Christmas.

Auto Output Knocks Index

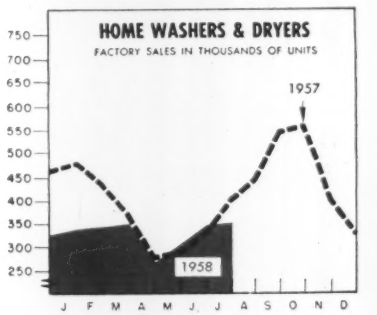
Largely because of a further cutback in the auto industry for model changeover, STEEL's industrial production index dropped another 3 points to a preliminary 132 (1947-49 = 100) for the week ended Aug. 30. Since equaling the year's peak of 139, the index has dropped 7 points, 5 of which are accounted for by motordom. The final phaseout of '58 production at Ford Motor Co. and wildcat strikes which are hampering other makers in early '59 phase-ins kept auto and truck production at ten-year lows.

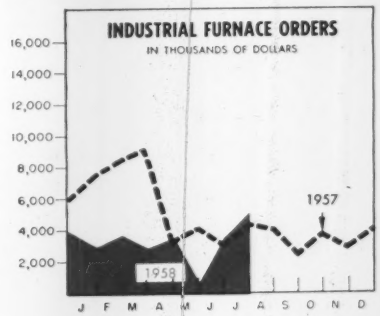
Both steel operations and freight carloadings continue to show strength. With automotive orders on the conservative side, the nation's steel mills are showing only slight week-to-week gains. But since the July 4 week, they have upped their operating rate nine consecutive times.

During the latest week, the nation's railroads set the 1958 peak in carloadings, reaching 633,687 cars. The biggest week-to-week increase was in miscellaneous freight, but only one category (grain) showed an increase over the corresponding 1957 figure. The Erie Railroad late last month recalled 100 employees to recondition freight cars in anticipation of a further upturn in loadings later this year.

Optimism Returns for PAs

Purchasing agents in Cleveland have shown a marked swing to optimism. The August report of their





	Washers		Dryers	
	1958	1957	1958	1957
Jan.	238,153	331,314	98,630	144,621
Feb.	263,099	319,580	78,578	114,517
Mar.	278,891	286,205	70,309	83,668
Apr.	224,896	230,675	38,475	42,850
May	262,999	254,195	41,898	31,572
June	288,831	282,289	54,173	46,783
July	277,287	340,915	75,513	70,440
Aug.	.....	329,046	.....	116,601
Sept.	.....	384,299	.....	164,468
Oct.	.....	369,487	.....	185,772
Nov.	.....	260,460	.....	141,663
Dec.	.....	206,787	.....	118,116
Totals	.....	3,589,476	.....	1,260,642

American Home Laundry Mfrs. Assn.

	1958	1957	1956
Jan.	3,045	7,380	10,244
Feb.	3,684	8,373	12,163
Mar.	2,871	9,090	7,025
Apr.	3,572	3,164	8,803
May	953	3,994	3,667
June	3,672	2,974	4,748
July	5,169	4,332	4,140
Aug.	....	3,924	6,722
Sept.	....	2,337	3,057
Oct.	....	3,621	8,741
Nov.	....	2,832	3,986
Dec.	....	3,992	5,858

*Not including new orders for steel mill furnaces.
Industrial Heating Equipment Assn. Inc.

association shows the number reporting better production and new orders is the highest since the survey began. Members also say that inventories are holding fairly steady, although finished goods stocks are down. Employment is strengthening, with some members back to a full, five-day week.

NICB Finds Orders Up

Another significant report comes from the National Industrial Conference Board, which surveyed 196 industrial firms. While most respondents feel that business is improving, they see no substantial rise this year. This is how they see business in the second half:

Orders—61 per cent expect higher dollar volume than in first half, but only 36 per cent expect to better the corresponding 1957 total.

Production—One-half expect to boost dollar value of output.

Inventories—54 per cent have cut inventories since the beginning of the year, and 57 per cent will reduce them further during the second half.

Earnings—Better than half expect to earn more before taxes than they did in the first half, but 73 per cent expect before-tax profits for the year to fall beneath the 1957 level.

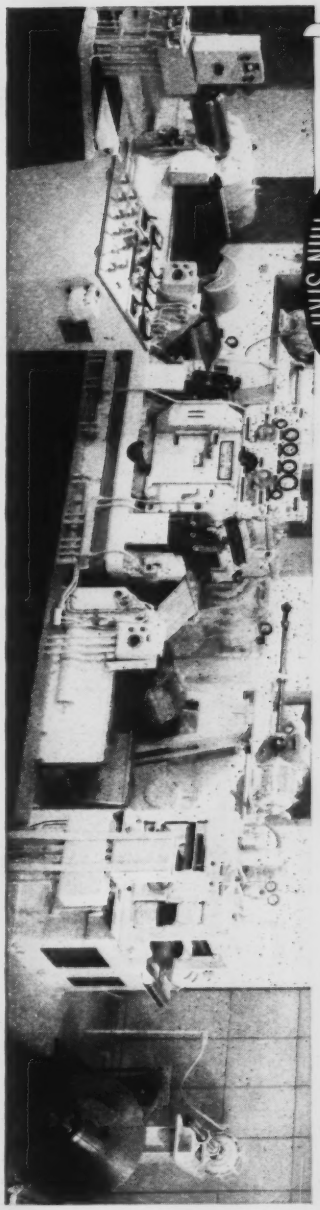
Structural Bookings Zoom

Bookings for fabricated structural steel hit 330,890 tons in July, the highest figure in 14 months, says the American Institute of Steel Construction Inc. This is the seventh consecutive monthly increase and marks the "sharpest recovery ever registered by the construction industry," declares L. Abbett Post, AISC executive vice president. This upturn reflects the improvement in contract awards which has been going on since the second quarter (see graph and table, Page 64) industry officials state.

Appliances Over the Slump

Factory sales of home laundry appliances continued to show improvement in June (see graph and table above). The recession in the appliance industry "definitely has bottomed out, and our business is once more on its way upward," says Fred Maytag II, president of the Maytag Co.

In response to an upturn in sales, General Electric Co. has recalled 525 workers at Appliance Park, Louisville.



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® 25,000:1 This fantastic ratio is possible only at Somers, where the latest equipment produces thin strip down to .001", as wide as 25".

With the installation of one of the largest Sendzimir mills in the non-ferrous industry, Somers is prepared to meet the broadest range of dimensional specifications, since it is already supplying thin strip down to .0001" in narrower widths.

Pure Nickel, Monel, Inconel and Inconel "X" are produced in gauges from .0001" to .020". Stainless Steel, electrolytic Copper and its alloys, such as Brass, Nickel Silver and Phosphor Bronze from .0001" to .010".

For a complete survey of your strip problems at no cost or obligation, write for field engineer or Confidential Data Blank.

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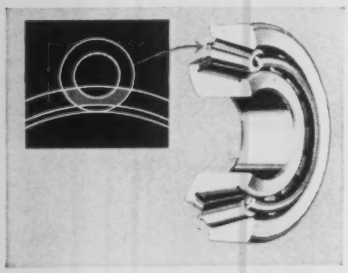
Bearings "keep cool" under hot steel!



HIGHER FLANGE IMPROVES ROLLER ALIGNMENT

As shown by the gray area above, the higher flange provides a large two-zone contact area for the roller heads. This greatly reduces wear—practically eliminates "end play". Larger oil groove provides positive lubrication.

Watch it! Coming down the line—another half-formed slab of red-hot steel! And with it comes a supreme test of bearing excellence. Bower Bearings are equal to it—helping to keep this mill operating smoothly and continually despite heavy loads and extreme temperature. Whatever the job, there's a Bower Bearing engineered to perform just as dependably when the going is toughest. Rigid quality controls and basic bearing design refinements like those shown at the left have reduced Bower Bearing failure to a practical minimum. If your product uses bearings, specify Bower! There's a complete line of tapered, straight or journal roller bearings for every field of transportation and industry.

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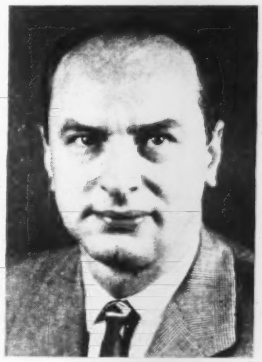
BOWER ROLLER BEARINGS

JAMES A. PERHAM
SpeedWay Mfg. chief eng.



A. E. CARTER
Worthington v. p.-mfg.

CARL L. HECKER
Oliver Corp. president

JOHN T. RAMANO
Federal Electric v. p.

James A. Perham, chief product engineer of Thor Power Tool Co.'s Aurora, Ill., Works, was named chief engineer of Thor's **SpeedWay Mfg. Co.** division at LaGrange Park, Ill.

A. E. Carter was elected vice president-manufacturing, **Worthington Corp.,** Harrison, N. J. He succeeds **Leslie C. Ricketts,** who will devote full time to increased duties as group vice president of five operating divisions in New Jersey and Massachusetts. Mr. Carter was manager of Ford Motor Co.'s parts plant at Rawsonville, Mich.

John D. MacKenzie was elected chairman, **American Smelting & Refining Co.,** New York. He succeeds the late **Kenneth C. Brownell.** Mr. MacKenzie continues as president.

G. W. Jones was appointed manager of market research at **Riverside-Alloy Metal Div.,** Riverside, N. J., H. K. Porter Company Inc.

John R. McCord was named to the new post of director of marketing at **Ferro Corp.,** Cleveland.

Edward L. Pulaski was made assistant chief works metallurgist at the West Leechburg, Pa., Works, **Allegheny Ludlum Steel Corp.**

Edwin C. Klotzburger was made general manager, **Fisher Body Div.,** General Motors Corp., Detroit. He succeeds **James E. Goodman,** who becomes GM group executive in charge of Fisher Body, Ternstedt, and Buick-Oldsmobile-Pontiac Assembly Divisions.

Carl L. Hecker, former executive vice president, was elected president, **Oliver Corp.,** Chicago. **Alva W. Phelps,** former president and chairman, continues as chairman and chief executive officer. **B. Haugen,** vice president and treasurer, was made chairman of the newly created financial committee.

Eugene A. Kracker was made plant industrial engineer for Republic Steel Corp.'s **Union Drawn Steel Div.** plant in Massillon, Ohio. He succeeds **Melvin H. Creter,** recently named assistant superintendent of industrial relations for the division.

Chrysostom B. Blanchard was made superintendent, gage division, **Pratt & Whitney Co. Inc.,** West Hartford, Conn. He replaces **Harold G. Lucas,** who retires Oct. 1. Mr. Blanchard was supervisor in charge of gage routing and estimating.

Jessop Steel Co., Washington, Pa., appointed **Robert McC. Maxwell** manager of sales, New York district, and of its subsidiary, Jessop Steel International Corp. He was executive vice president and general manager of Chandler-Boyd Co.

William F. Oswalt was named general manager of **General Electric Co.'s** direct current motor and generator department, Erie, Pa. He was general manager, general purpose control department, Bloomington, Ill.

Edmund W. Hollister was made assistant manager of **Austin Co.'s** 14-state Cleveland district.

John T. Ramano was elected a vice president of **Federal Pacific Electric Co.,** Newark, N. J. Currently serving as manager, distributor products division, he has been with Federal Pacific for 13 years. He became plant manager at Newark in 1948, and this April was named a vice president of Roller-Smith Inc., recently acquired Federal Pacific subsidiary.

James MacGregor, former president of York Engineering & Construction Co., joined **Aetna-Standard Engineering Co.,** Pittsburgh, as sales engineer for the pipe and tube mill division. **Charles MacGregor,** former vice president of York Engineering, is also associated with **Aetna-Standard,** and will serve as a designer in the engineering department in Pittsburgh.

James E. Kunkler, southwestern division sales manager, **Armco Drainage & Metals Products Inc.,** subsidiary, Armco Steel Corp., Middletown, Ohio, was made manager, central division. He succeeds the late **A. C. Neff.**

Harold J. Fryar, director of manufacturing, **Coleman Co. Inc.,** Wichita, Kans., was elected vice president-manufacturing and engineering.

John F. McCrudden Jr. was named New York district sales manager for **Alan Wood Steel Co.** He succeeds **William E. Bossert,** retired.

Sutton Engineering Co., Pittsburgh, named **R. A. Bland** general sales manager; **E. T. Risan,** as-

THOMAS A. KENNEDY
Zurn fluid control post

CHARLES C. SMITH
Auer Register president

ROY C. HAUCK
Southwest Mfg. president

JAMES L. WHALEN
Eclipse Air Brush v. p.

sistant to the president; **J. E. Martin**, plant manager, Bellefonte, Pa.

Zurn Industries Inc., Erie, Pa., decentralized and expanded its fluid control division as a separate operation. **Thomas A. Kennedy** was made vice president-general manager, responsible for design, manufacture, and sales of fluid control devices. He was assistant to the executives, supervised offices of the company in New York, and was responsible for its operations in Spain.

Charles C. Smith was elected president, **Auer Register Co.**, Cleveland. He was consultant to the president, and general manager-special products division, Lord Mfg. Co.

Robert G. Burson was made general sales manager, mechanical goods division, **Dayton Rubber Co.**, Dayton, Ohio. He succeeds **L. C. Strobeck**, retired.

Robert W. Schultz was promoted to director of pricing, **Midland Screw Corp.**, Chicago.

Norman F. Fyler was made manager of **Litton Industries'** electronic display laboratory at Emeryville, Calif.

V. R. Smith was made chief engineer, Los Angeles plant, **Bethlehem Pacific Coast Steel Corp.**

Named sales managers for the electrical conductor division of **Kaiser Aluminum & Chemical Sales Inc.** are: **J. P. Moran**, Philadelphia region; **D. C. Keenan**, Dallas region.

Roy C. Hauck was named president, **Southwest Mfg. Co.**, Aurora, Mo. He was general manager of Ingersoll Conditioned Air Div., Borg-Warner Corp. **Leonard Bisby**, former chief engineer and plant manager, was promoted to vice president of Southwest, a subsidiary of F. E. Myers & Bros. Co. **Curtis Ginn Jr.**, Myers president and also president of Southwest, becomes chairman of the Aurora company.

James G. Bouska was appointed sales manager of the Los Angeles branch of **Exide Industrial Div.**, Electric Storage Battery Co., succeeding **Robert J. Muth**, who transferred to the firm's Philadelphia headquarters as field sales manager. Mr. Bouska was assistant branch sales manager in San Francisco.

F. W. Lloyd was named vice president-manufacturing at the **Northrop Div.**, Northrop Aircraft Inc., Hawthorne, Calif.

Joseph A. Resca was named New York district sales manager, **ElectroData Div.**, Burroughs Corp.

At the **Longhorn Div.**, Thiokol Chemical Corp., Marshall, Tex., **John H. Sims** was named chief engineer. Former chief product engineer, he now is in charge of the rocket engineering department. **John T. Kerr** was made chief product engineer, in charge of the projects division, rocket engineering. **Raymond A. McElvogue** was made propellent plant manager, in charge of the rocket engineering department, production department, and production planning division. **H. C. Havron** was named chief of the new quality control department.

James L. Whalen was made vice president-sales manager, **Eclipse Air Brush Co.**, Newark, N. J. He has served as sales manager since 1954.

Crucible Steel Co. of America, Pittsburgh, named **A. E. Nehrenberg** section manager-technical development; **R. W. Metter**, administrator-patents and licenses.

Russell Miller was made director of research, **Promat Div.**, Poor & Co., Waukegan, Ill.

Charles M. Wetzel, executive vice president, **Wayne Iron Works**, Wayne, Pa., is devoting full time to administration and general management of the company's over-all operations. **Clarence G. Harding Jr.** was named treasurer; **Jack A. MacInnes**, director of marketing.

Harry R. Hesse was elected secretary and general counsel, **Wheeling Steel Corp.**, Wheeling, W. Va. He succeeds the late **J. E. Bruce.**

Marbon Chemical Div., Borg-Warner Corp., named **D. M. Pratt** sales manager for resins and adhesives; **William A. Suiter** sales manager for Cycolac plastic. They have headquarters at newly constructed facilities at Washington, W. Va.

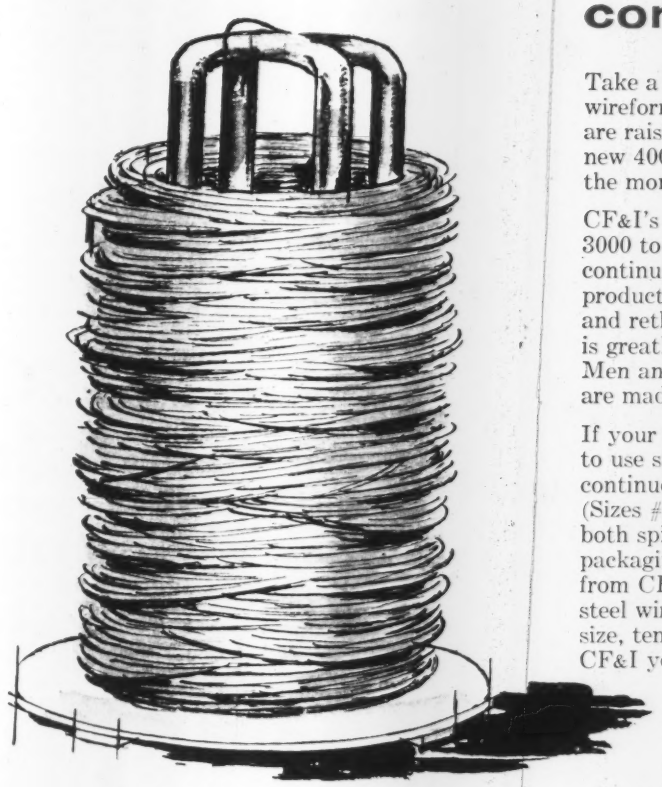
Tennessee Products & Chemical Corp., Nashville, Tenn., named three sales division managers: **Howard B. Myers**, metallurgical division; **Dr. E. Keith McMahon**, chemical division; **B. S. Howell Jr.**, fuels and building materials division.

Kenneth J. Schultz was made Chicago branch manager, **Baker Indus-**

for longer runs and lower costs

buy CF&I WIRE

in 3000-4000 lb. continuous lengths

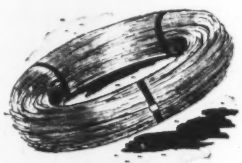


Take a cost-conscious look at your wireforming operation. If short length coils are raising costs and cutting profits, CF&I's new 4000-lb. "spider" package may provide the money-saving answer to your problem.

CF&I's returnable "spiders" carry from 3000 to 4000 lbs. of wire in a single continuous length. They can increase production because downtime to stop, reload and rethread your wireworking machines is greatly reduced. Scrap losses are minimized. Men and materials handling equipment are made available for other work.

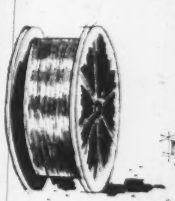
If your manufacturing process is not equipped to use spiders, order our 200-2000 lb. continuous-length steel-strapped wire coils. (Sizes #13 AWG and coarser apply for both spider and coils.) Other standard packaging methods are, of course, available from CF&I. For high or low carbon steel wire; round, flat or shaped; in any size, temper, grade or finish, make CF&I your source of supply.

OTHER CF&I STANDARD PACKAGING METHODS

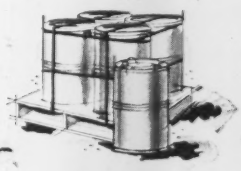


Steel strapped coils (200-2000 lbs.)

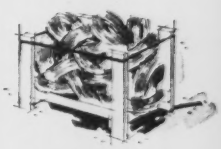
Non-returnable spiders (500-700 lbs. capacity)



Reels (500-800 lbs. capacity)



Pay-off paks



Steel strapped wooden rack

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION

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CHARLES W. SHERMAN
J&L div. tech. dir.

JACK PRESTON
Allegheny Ludlum metallurgist

ROBERT B. HEPPENSTALL Jr.
Heppenstall vice president

HENRY L. CHARLTON
Phoenix Mfg. v. p.-sales

LEONARD C. PIETSCH
Phoenix Mfg. v. p.-planning

PAYSON B. CLARKE
Mosher Steel v. p.-gen. sales

trial Trucks Div., Otis Elevator Co.

Phoenix Mfg. Co., Joliet, Ill., subsidiary of Union Tank Car Co., elected **Henry L. Charlton** vice president-sales; **Leonard C. Pietsch**, vice president-planning. Both are newly created positions. Mr. Charlton was assistant to the president and manager of sales. Mr. Pietsch was manager of manufacturing. His new duties include long-range planning for the steel mill division.

Harold B. Swindells was elected treasurer at **Laminated Shim Co. Inc.**, Glenbrook, Conn.

H. F. Guipe was made factory manager, **Penn Controls Inc.**, Goshen, Ind.

Jay Foreman was made factory manager for **Duriron Co.**, Dayton, Ohio.

John W. Golden was named purchasing agent, **Sherman Products Inc.**, Royal Oak, Mich. He will supervise production materials and supplies.

Payson B. Clarke was named vice president and general sales manager, **Mosher Steel Co.**, Houston. He was vice president-sales at Dallas. **L. E. Thomas** was made sales manager; **Frank G. Oliver**, assistant sales manager, Houston office. **Howard A. Jones** was made sales manager, Dallas office and plant; **James R. Russell**, assistant sales manager.

C. B. Malm was named sales manager, **Mayflower Air-Conditioners Inc.**, Minneapolis. He was with Minneapolis-Honeywell Regulator Co.

John O. Campbell was appointed Chicago area sales manager for **Westinghouse Electric Corp.'s** apparatus division. He was distribution apparatus manager, central region, Pittsburgh.

William P. Hanks was made midwest district manager; **Robert M. Underwood**, northeast district manager, **Cleveland Tramrail Div.**, Cleveland Crane & Engineering Co., Wickliffe, Ohio.

Charles W. Sherman was made technical director of **Jones & Laughlin Steel Corp.'s** stainless and strip division, Pittsburgh. He is in charge of research and development.

Jack Preston was named chief research metallurgist, special metals, at the Watervliet, N. Y., research laboratory of **Allegheny Ludlum Steel Corp.** He was supervising research metallurgist at Watervliet, concerned with melting and processing of special metals.

Robert B. Heppenstall Jr. was elected a vice president of **Heppenstall Co.**, Pittsburgh. He will serve as general manager, responsible for manufacturing, engineering, and sales of the four plants. He was general manager, ring division, Indianapolis.

Gordon Paul was made works manager, foundry division, **Hansell-Elcock Co.**, Chicago. He was with Warner & Swasey Co.'s Sterling Foundry Div. as manager. **C. N. Outman** continues as division manager.

Norman H. Holland was made sales manager, Athol, Mass., Div., **Union Twist Drill Co.**

J. B. Wharton Jr. was elected president and chief executive officer of **National Can Corp.**, Chicago. He succeeds **Robert S. Solinsky**, elected chairman.

Diamond Alkali Co., Cleveland, elected **William H. McConnell**, vice president-sales, as vice president-marketing. **Henry B. Clark** was named director of sales, a new post, and is succeeded as general manager, Soda Products Div., by **John W. Mantz**, former general manager of the silicate, detergent, calcium division, now combined into a single unit.

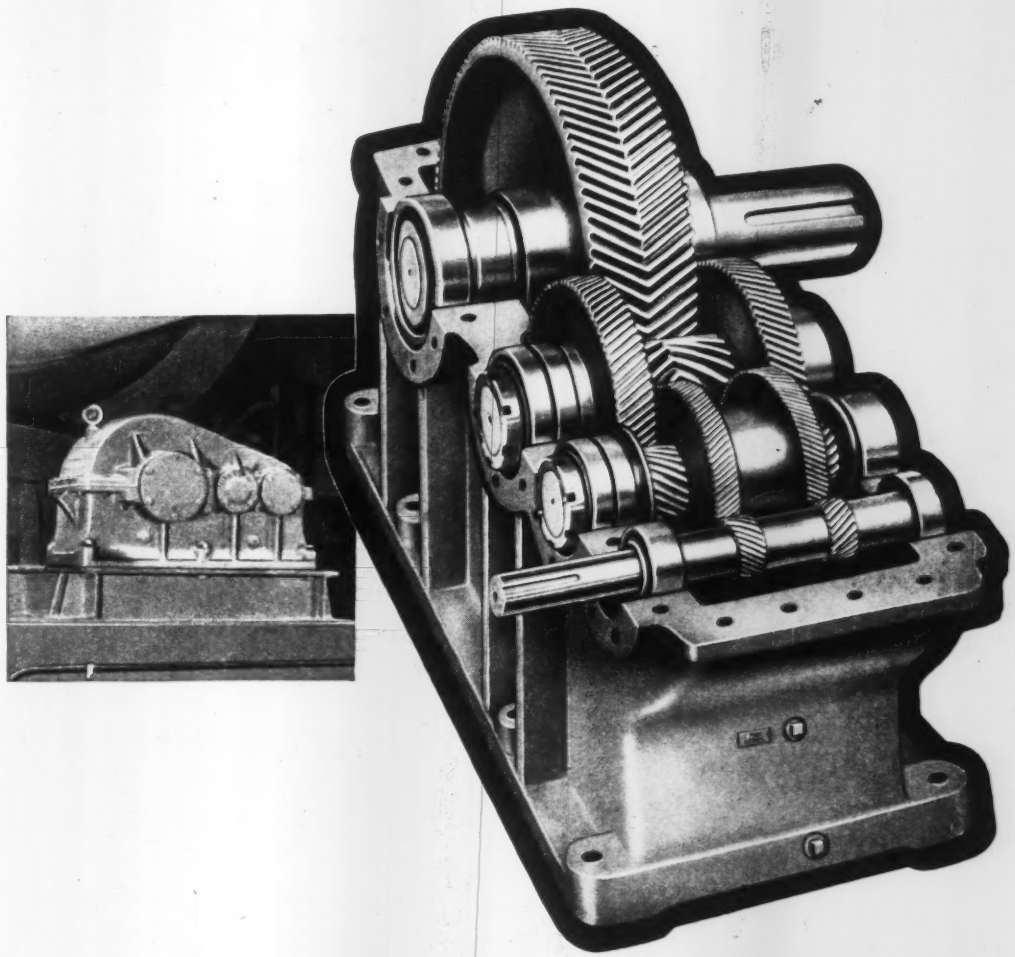
OBITUARIES...

Earl L. Hauman, 64, vice president and general manager, **Exolon Co.**, Tonawanda, N. Y., died Aug. 26.

Edward A. Cowles, 88, founder and president, **Cowles Tool Co.**, Cleveland, until 1954, died Aug. 26.

W. J. During, 58, former president, **Precision Castings Co.**, Syracuse, N. Y., died Aug. 22.

R. W. Bowman, 58, executive vice president, **Pittsburgh Bridge & Iron Works**, Pittsburgh, died Aug. 25.



THE HEAVIER THE LOAD . . . THE MORE YOU NEED

PHILADELPHIA HERRINGBONE REDUCERS

Heavy repeated shock loads . . . high horsepower . . . round-the-clock operation . . . put them together and you have the kind of a job where Philadelphia Herringbone Reducers perform best. They will last longer and save your maintenance dollars because extra strength is built into every part . . . housings, shafting, bearings and gearing.

To be specific:

Housings are specially reinforced at points of greatest stress. Extra heavy bearings take shocks and heavy overhung loads in stride. Result: shaft alignment is accurate . . . and it stays accurate. Gears, pinions and bearings last longer.

To meet the specific needs of each application, gearing is specially designed and symmetrically arranged in the housing. Result: the bearings on each shaft carry equal loads, shaft deflections are minimized, bearings and gearing have higher shock load capacity.

Pound for pound, horsepower for horsepower and dollar for dollar, you can't buy a herringbone reducer that will outlast a Philadelphia. They are designed with *your* heavy duty drive problems in mind . . . so that you will never have a drive problem.

Philadelphia Herringbone Reducers are available in single, double and triple reduction for ratios of 1.75:1 to 292:1. Write today for your copy of Catalog H-55.

PHILADELPHIA GEAR CORPORATION

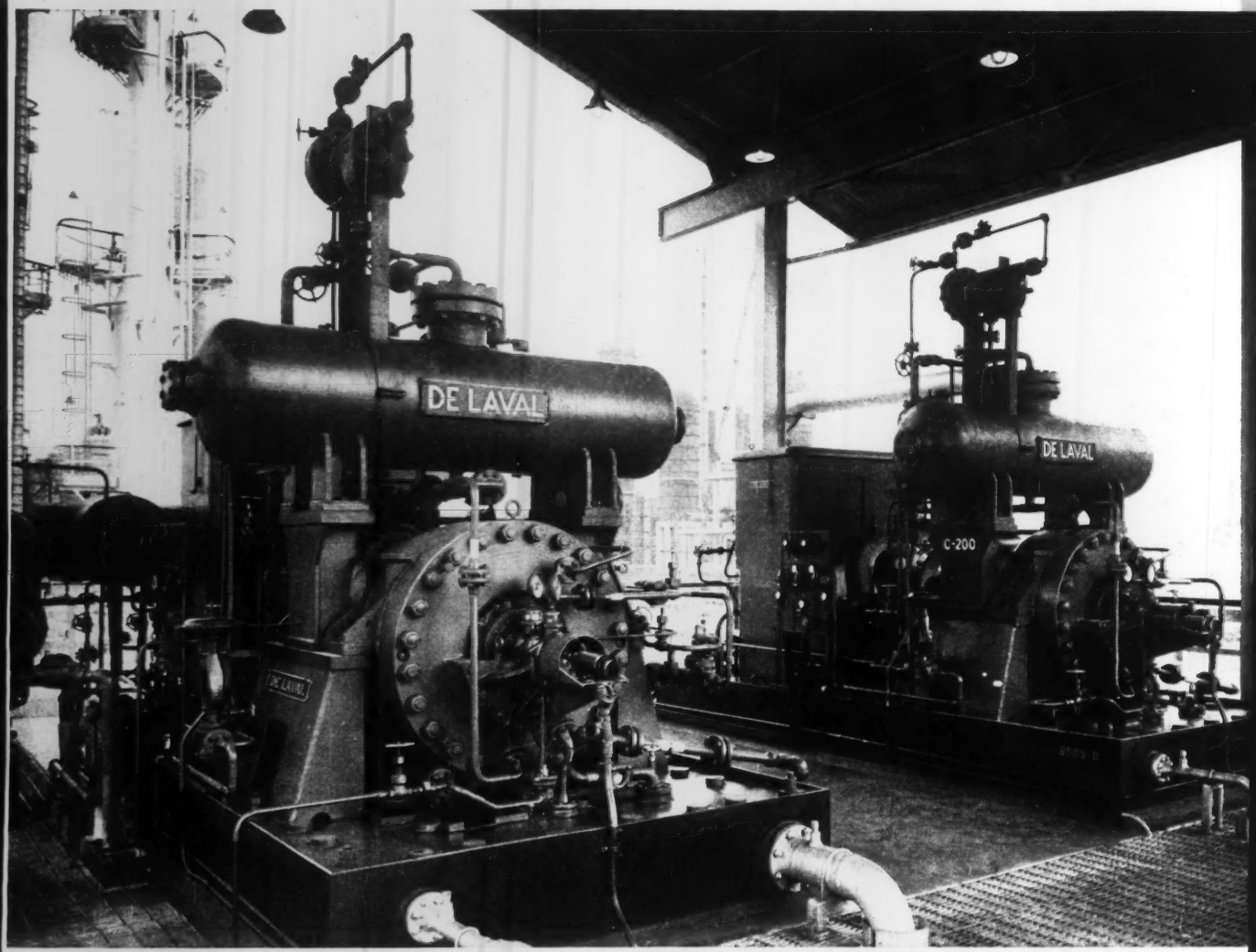
Erie Avenue and G Street • Philadelphia 34, Pennsylvania

philadelphia gear drives

Offices in all Principal Cities • Virginia Gear & Machine Corp., Lynchburg, Va.

INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS

Creative Engineering by DE LAVAL



Designing to Customer's Requirements

De Laval makes all sizes and types of centrifugal compressors. But it's that little *extra*, which we call *creative engineering*, that makes De Laval so important to you. Take the two De Laval barrel type centrifugal compressors at Magnolia Petroleum's new refinery, Beaumont, Texas, for example. Designed around given job specifications, they give extra performance, longer life and trouble-free operation.

Whether it's centrifugal compressors, blast furnace blowers, ship propulsion units, turbine generators or other diversified products serving practically *all* industries, De Laval *creative engineering* plus precision manufacturing and highest quality control assures lasting customer satisfaction.

DE LAVAL *Steam Turbine Company*

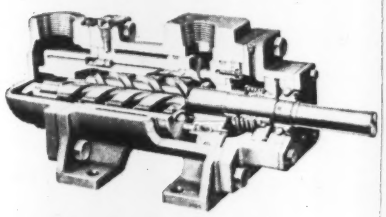
860 Nottingham Way, Trenton 2, New Jersey

DL-429

More Ways

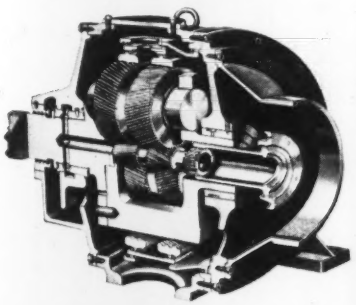
DE LAVAL

Creative Engineering Serves Industry



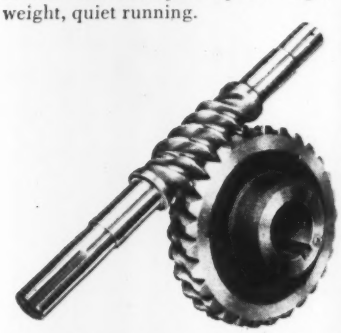
Versatile IMO Pump Does Many Oil-Handling Jobs

This unique De Laval IMO positive displacement pump is used widely for handling viscous fluids. Simplicity of design (only three moving parts) provides quiet pulsation-free high speed operation.



Hi-Speed, Hi-HP Planetary Gears

De Laval-Stoeckicht Planetary Gears deliver highest horsepower at high speeds in the most compact space. Light in weight, quiet running.



Many Advantages of Worm Gearing

De Laval worm gearing features interchangeability, high shock load capacity, long life, smooth quiet power, larger ratios, safety and ease of maintenance.

Send today for 48-page booklet—"Men, Machines and Materials at DE LAVAL."

De Laval Steam Turbine Company
860 Nottingham Way, Trenton 2, New Jersey

Building Dedicated

First speculative structure erected in Chicago Loop area in 24 years features ultramodern construction

THE BORG - WARNER Building, one of the first Chicago skyscrapers of curtain wall construction, was dedicated Aug. 21.

All sides of the 22 story, $14 million office building are exposed. Walls are sheathed with blue, porcelain enameled steel panels. It's owned by National Properties Inc.

Borg-Warner, the main tenant, occupies the top five floors and the roof suite. Other tenants are Pullman-Standard Car Mfg. Co., Chicago, Standard Railway Equipment Mfg. Co., Chicago, and American Can Co., New York.

A two-level industrial-educational exhibit center is featured in the lobby. The 6500 sq ft area is known as the Borg-Warner Exhibition Hall.

Borg-Warner sells products to the automotive, farm equipment, aircraft, home appliance, and specialty steel industries. It's also active in air conditioning, petroleum, home building, electronic, and chemical industries.

Builds Million-Gallon Tank

Consolidated Western Steel Div., United States Steel Corp., Los Angeles, is building a 1-million-gallon welded steel water storage tank at Bryce Canyon National Park, which will double existing capacity.

Development Lab Rising

United States Steel Research Center, Pittsburgh, is building an electromechanical development laboratory. Dr. R. B. Mears, director, Applied Research Laboratory, says the lab will be used to study instrumentation and process and material handling mechanisms.

New Locomotive Coming

Electro-Motive Div., General Motors Corp., La Grange, Ill., is completing an experimental free-piston-engine locomotive, using two 1000 hp engines. Upon completion, the locomotive will be turned over to Union Pacific Railroad for testing. A reciprocating compressor feeds hot gases into a turbine which is hooked to generators supplying power to the traction motors.

Grede Buys Foundry

Grede Foundries Inc., Milwaukee, has bought an unused foundry property of Cutler-Hammer Inc., Milwaukee. William J. Grede, Grede Foundries' president, says the firm will not operate the foundry, but will use its equipment in Grede's other foundries.

Casting Line Licensed

Buflovak Equipment Div., Blaw-Knox Co., Buffalo, will convert its foundry to additional fabricating and manufacturing space. Black-Clawson Co., Hamilton, Ohio, has been licensed to manufacture the Buflokast line of cast iron vessels, previously founded by Buflovak Equipment Div.

Lift Truck Plant Producing

Hyster Co., Portland, Oreg., says production has begun at its new plant in Danville, Ill. The 200 by 500 ft plant is producing lift trucks. James' Woodley, manager of Danville's Hyster plants, says two wings will be added to the structure.

New Boiler for Brown

Babcock & Wilcox Co., New York, will build and install an integral-furnace boiler at Brown University, Providence, R. I. Scheduled to go into operation in early October, it will be the second B&W boiler of this type at Brown.

Crucible Leases Building

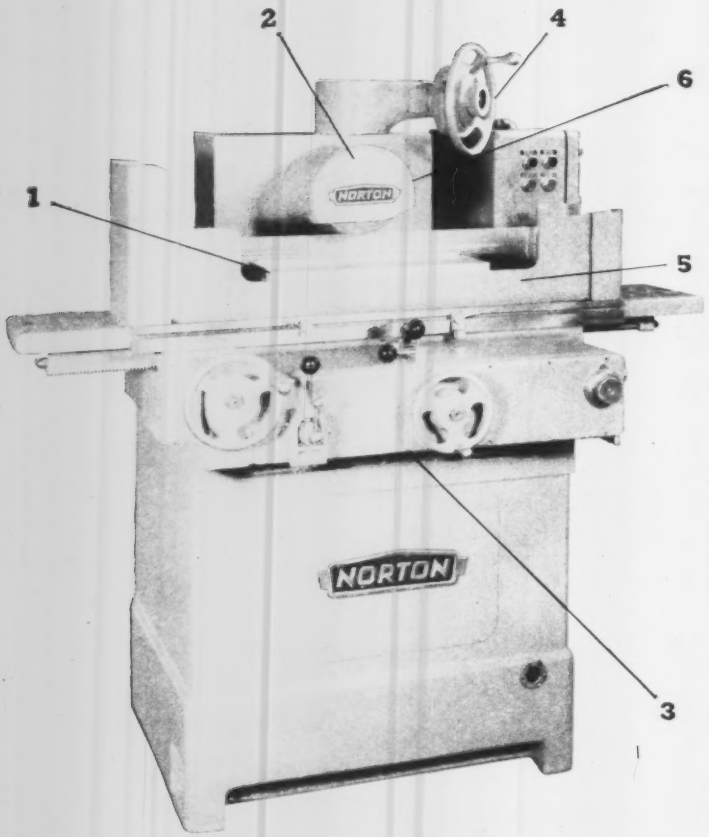
Crucible Steel Co. of America, Pittsburgh, has leased a new 5000 sq ft building in Toledo, Ohio, for office and warehouse purposes. Jack Rolfe, Crucible's Toledo representative, will be in charge of sales and warehouse activities.

Smith Corona Adds Space

Smith Corona (Canada) Ltd., Toronto, Ont., is building a 12,000 sq ft addition to its Scarborough plant, increasing area by 25 per

Now—FINISH FLAT

New Norton 6" x 18" Surface Grinder Ready For Immediate Delivery



You FINISH FLAT FASTER with the new Type S-3 hydraulic which is equally efficient for long production runs or a wide variety of toolroom grinding because of its new cost-cutting features. It produces plane surfaces smoothly — with automatic or manual cross feed and with such fast, cool-running action that it saves time and money on every job.

Ask your Norton Representative for the whole story. Or write us direct for Catalog 2128. And remember: only Norton Company offers you such long experience in both grinding machines and grinding wheels to bring the "Touch of Gold" that helps you produce more at lower cost. NORTON COMPANY, Machine Division, Worcester 6, Massachusetts.

Profit from these benefits

1. Get Jobs Done Fast and Cool — high table speed, *125 feet per minute, maximum.* **2. Handle Tall Work Pieces** — greater vertical capacity, *15"*. **3. Get Lasting Accuracy** with guide-rail cross slide construction. **4. Control Vertical Feed Accurately and Position Fast** with two-speed .0001" increment hand wheel. **5. Benefit from Better Sighting and Loading** due to contoured splash guards. **6. True Forms, Even on Worn Wheels** because of recessed wheel spindle housing.

To Economize, Modernize with **NEW**

NORTON

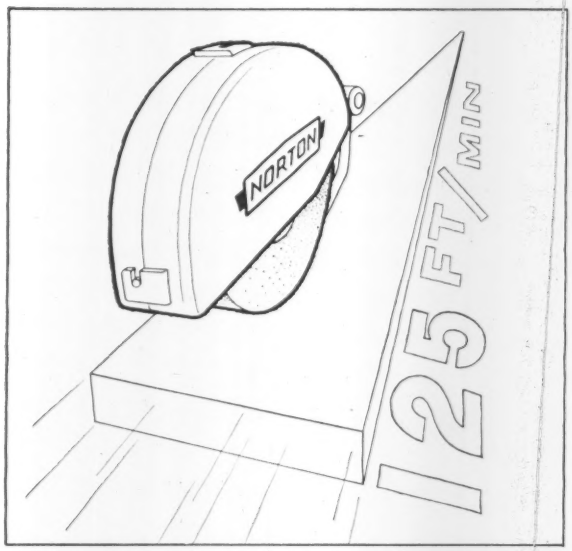
GRINDERS and LAPPERS

Making better products... to make your products better

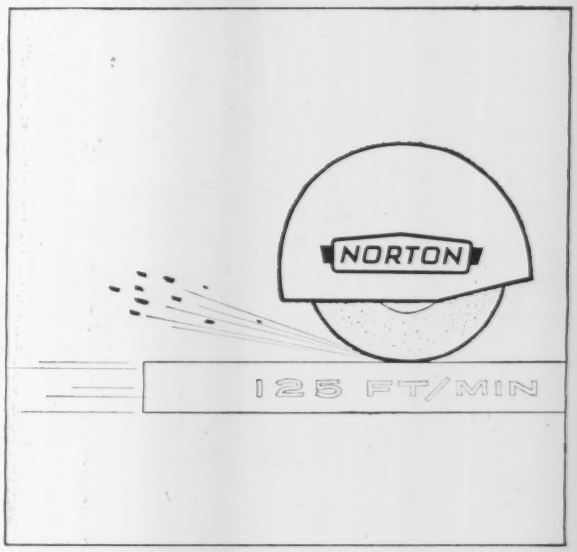
NORTON PRODUCTS
Abrasives • Grinding Wheels • Grinding Machines
Refractories • Electrochemicals
BEHR-MANNING DIVISION
Coated Abrasives • Sharpening Stones
Pressure-Sensitive Tapes
District Offices
Worcester • Hartford • Cleveland • Chicago • Detroit
In Canada: J. H. Ryder Machinery Co., Ltd., Toronto 5

FASTER.... at lower cost

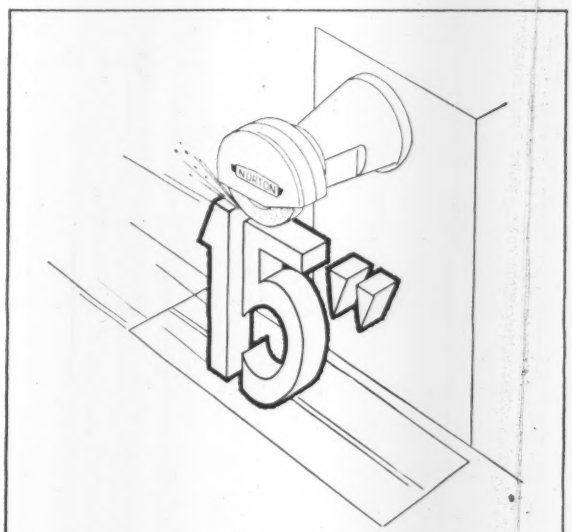
These and many other new features make this machine a "must" for your surface grinding jobs.



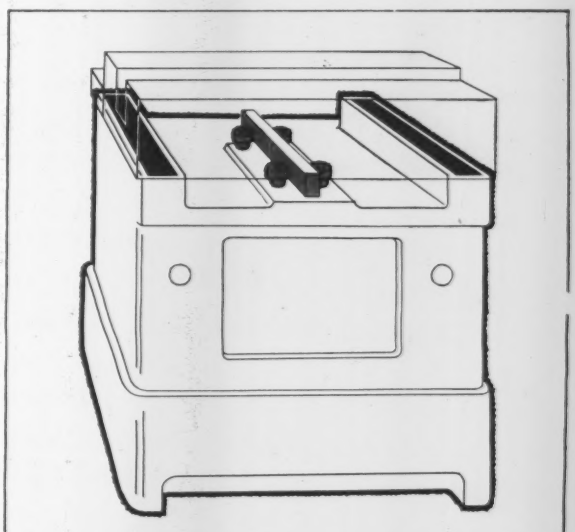
Finish flat faster, cut grinding time and increase production, with high table speed, 125 feet per minute.



Heat goes off in the chips, due to new, high table speed. This cooler grinding permits faster production on heat-sensitive metals.



Handle taller work pieces with high-grind wheel head construction. The vertical capacity from the table top to the bottom of standard full size 8" diameter grinding wheel is 15"



Widely spaced, flat ways and guide-rail cross slide design maintain cross feed accuracy, providing lastingly accurate grinding of shoulders or parallel surfaces.

cent. The addition will provide manufacturing space for new products, including typewriters and adding machines.

Lockheed Opens Branch

Georgia Div., Lockheed Aircraft Corp., Marietta, Ga., has established a Special Products Branch. It will design, develop, and produce support equipment for missiles and aircraft, and manufacture aircraft and missile subassembly structures on subcontracts.

USS Builds Sheet Bay

A sheet processing bay is under construction at U. S. Steel Corp.'s Supply Div., Los Angeles. The structure, to be finished by early 1959, will provide services for the plant's carbon and stainless steel and aluminum sheet products. Flat sheets up to 20 ft long will be provided from coils.

Digitron Changes Name

Digitron Inc., Los Angeles, has changed its name to Computer Equipment Corp., to clarify the nature of its business, says A. C. Bellanca, president. The company develops hybrid electronic systems.

Vulcan-Hart Adds Space

Vulcan-Hart Mfg. Co., Baltimore County, Md., manufacturer of commercial ranges, kitchen equipment, and utensils, is building a 12,000 sq ft addition to its plant.

Produces Boron Carbide

Carborundum Co.'s new boron carbide plant at Niagara Falls, N. Y., is now in full production. The new furnace facilities and grain plant were built because of greatly increased demand requiring unusual combinations of boron carbide properties. Joseph S. Imirie is general manager of Carborundum's Electro Minerals Div.

$100,000 Addition Done

Barry Blower Co., Minneapolis, has completed a $100,000 addition which doubles its floor space. The company makes fans and blowers for the heating and air conditioning industry.

Erie Forge Buys Shakeout

Allis-Chalmers Mfg. Co., Milwaukee, has shipped a 10 by 12 ft, 100-ton flask mogul style Foundromatic shakeout to Erie Forge & Steel Corp., Erie, Pa. It was designed for 50-ton core knockout duty and has a stress relieved, lattice reinforced body with bottom discharge.

Ships First Stainless

Jones & Laughlin Steel Corp.'s new $17 million Stainless & Strip Div., Louisville, has made its first shipment of stainless steel. Its monthly capacity is 3000 tons.

Boiler Plant Being Built

Cleaver-Brooks Co., Milwaukee, has begun building a 25,000 sq ft plant at its Stratford, Ont., site. The plant will be completed late this year, and will produce packaged boilers. J. C. Cleaver, Cleaver-Brooks president, says the company will invest $900,000 at Stratford.

The firm's Special Products Div., Waukesha, Wis., will be established as a separate corporation: Cleaver-Brooks Special Products Inc. It makes evaporation and distillation equipment.

There's a Satisfied Customer back of most orders for

Diamond Perforated Metals

Naturally, we're always glad to make new friends and open up new accounts but, more and more as time goes on, the greater part of our business comes from concerns that have dealt with us before—some of them for nearly half a century.

One Reason is because they have learned that Diamond Perforated Metal Products are always reliable and our charges in line with competition of comparable quality. Another Reason is because our facilities are so complete, and our stock of dies so extensive, that almost any demand for perforated metal sheets, plates or parts can be taken care of promptly, accurately and economically.

ALL inquiries receive prompt attention. Illustrated catalogs give helpful working data—show many modern applications—enable you to select the best pattern for any purpose.

DIAMOND MANUFACTURING CO., WYOMING (Wilkes-Barre Area) **PENNA.**

New Bulletin No. 47, describes DIAMONTEX Perforated Metal Lay-in Panels for Modern Acoustical Ceilings

NEW ADDRESSES

Exide Industrial Div., Electric Storage Battery Co., moved its Boston branch to 315 Mystic Ave., Medford, Mass. E. J. Fitzmaurice Jr. will continue as branch manager.

Research & Advanced Development Div., Avco Mfg. Corp., moved from Lawrence, Mass., to 201 Lowell St., Wilmington, Mass.

Arnessen Electric Co. Inc. and its affiliates, Corrosion Dynamics Inc. and Arnessen Corp., moved their offices and plant to larger quarters at 335 Bond St., Brooklyn 31, N. Y.

Strom Steel Ball Co. moved from Cicero, Ill., to Erwin, Tenn. The firm produces high precision balls.

Troy Plating Works Inc., Chicago, moved to 514 S. Laflin St. The firm will begin new metal

Youngstown Sheet and Tube normalizing furnace lined with B&W Insulating Firebrick

Designed and constructed by Salem Brosius, Inc. for the Campbell Works of Youngstown Sheet and Tube Company, Youngstown, Ohio, the 57′ x 38′ inside chamber of this huge new walking beam furnace is completely lined with lightweight B&W Insulating Firebrick.

This giant furnace is used to normalize seamless oil well casings and operates continuously at a temperature of 1700 F.

The B&W IFB used in the walls and suspended roof of this furnace are the lightest insulating firebrick made. This light weight and consequent low heat storage keep furnace walls at uniform temperature to provide the most efficient heating conditions. B&W IFB also reach uniform temperature faster with less fuel consumption, which means appreciable savings to furnace operators.

In addition, lightweight B&W IFB make possible more economical suspended roof constructions. They also simplify brick installation and replacement.

For information on how B&W Insulating Firebrick can lower your furnace operating costs, consult your B&W Refractories Representative or write for Bulletin R-2-H.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

B&W REFRACTORIES PRODUCTS:
B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick
B&W Insulating Firebrick • B&W Refractory Castables, Plastics and Mortars • B&W Silicon Carbide • B&W Ramming Mixes • B&W Kaowool

R-600

secure your product quality with HUBBELL premium miniatures

Here are the "tremendous trifles" upon which product quality depends. Hubbell miniature screws assure efficiency in your assembly operations, dependable product operation and long term product life and user satisfaction.

Hubbell miniatures are the finest obtainable. They are available in sizes #0 and #1 in steel, stainless steel or brass; and in head styles and sizes to meet your most exacting needs.

Hubbell quality can be your greatest production economy. If you have a special problem . . . call Machine Screw Department, Bridgeport, EDison 3-1181.

Even the PACKAGING PAYS OFF

New plastic "see through" boxes permit screw identification or inspection without opening the box.

Pressure-sensitive labels provide convenient identification by size and type; reseal the box securely after opening.

Sturdy "showcase" boxes stack easily, take up less room on storage shelves or work counters.

HARVEY HUBBELL, INC.

HIGHEST QUALITY
WIRING DEVICES • MACHINE SCREWS

OVER 60 YEARS' EXPERIENCE in the manufacture of highest quality, rolled thread machine screws and special cold headed parts.

MACHINE SCREW DEPARTMENT BRIDGEPORT 2, CONNECTICUT

fabricating, stamping, and tube bending operations in the new plant.

Latrobe Steel Co., Latrobe, Pa., has moved its Los Angeles branch to larger quarters at 2919 S. Tanager Ave., says Philip E. Gordon, branch manager.

CONSOLIDATIONS

Cooper-Bessemer Corp., Mt. Vernon, Ohio, acquired Creole Engineering Inc., Houston. The new subsidiary will be headed by T. E. Kraner, president, and will concentrate initially on the construction of packaged, gas engine compressors.

Supreme Steel Equipment Corp., Brooklyn, N. Y., purchased Universal Steel Equipment Corp., Long Island City, N. Y. Supreme makes office equipment and library shelving; Universal makes revolving bins, steel shelving, and wall bulletin boards.

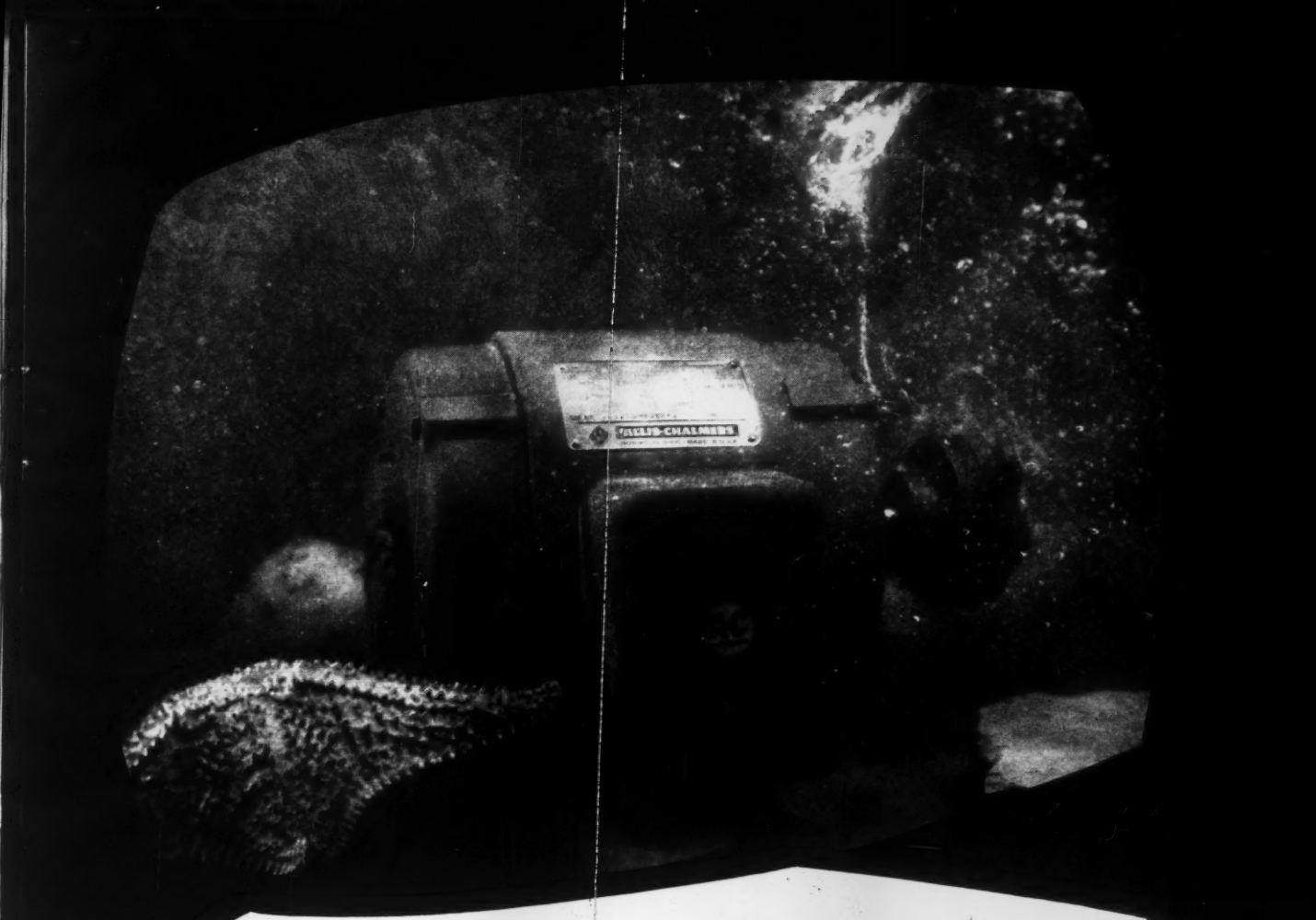
Allan Herschell Co., North Tonawanda, N. Y., maker of amusement park equipment, purchased U. S. Brownie Co., Joliet, Ill., maker of gasoline powered miniature tractors.

Lindberg Industrial Corp., Chicago, acquired Continental Industrial Engineers, Chicago. Continental will operate as a separate division with William Darrah, former president, as manager.

NEW OFFICES

Zagar Inc., Cleveland, opened a district office at 7114 Rising Sun Ave., Philadelphia. Harry Hutter is manager. The firm makes drilling and tapping machines, broaching machines, collets and collet fixtures, gearless drill heads, and special machinery.

Refractory & Insulation Corp., New York, opened a branch office and warehouse at 1660 Kenmore Ave., Buffalo, N. Y., under the di-



open motors for extreme conditions

Save up to 60%!

Here's an amazing advance in motor technology! It's the *Super-Seal* motor line — an open motor design so completely unaffected by moisture, dust, dirt, oil, acids and alkalis that it can be used in many applications previously requiring more costly enclosed motors. *Savings range from 15 to 60%.*

Super-Seal motor superiority results from revolutionary insulating techniques. Available in any integral horsepower size, smaller *Super-Seal* motors incorporate an encapsulated stator. A durable epoxy resin encloses the stator, creating an electrical system impervious to outside elements.

In larger sizes, *Silco-Flex* insulation is used. In this system, silicone rubber is vulcanized into a homogeneous mass to form a flexible, moisture and heat resistant, void-free dielectric barrier around coils and leads.

Both of these insulation systems are unsurpassed. Proof? An encapsulated motor ran for hundreds of hours at full load in a 4% brine solution.

Find out more about new economies in motors from your A-C representative or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin. *Silco-Flex and Super-Seal are Allis-Chalmers trademarks.*

ALLIS-CHALMERS A-C ALLIS-CHALMERS

A-5802

MicroMach extra-high-tensile stainless steel sheets up to 48" WIDE for aircraft and missile use

As the speed of today's aircraft rapidly approaches the Thermal Barrier, conventional metals are being left far behind in the race to satisfy the structural requirements of supersonic craft. Needed are metals that can withstand the intense heat caused by air friction at high speeds and still retain their strength. One such metal, MicroMach stainless, has been in use for more than a year.

MicroMach is a special aircraft and missile grade of modified type 301 stainless steel sheet furnished to higher mechanical properties than are available in other commercial high tensile grades in the full hard condition.

These sheets are rolled to extremely close tolerances (as low as plus or minus 3%) with micro-accuracy and precise uniformity of gauge. The surface of MicroMach sheet is smooth, clean and dense; qualities so important in minimizing surface friction.

For further information write to Aircraft Steels Dept

Washington Steel Corporation
9-0 WOODLAND AVENUE
WASHINGTON, PA.

MicroRold stainless steel is also available in all popular grades and to meet regular government specifications. Sheets up to 36" wide can be had as thin as .005", and over 36" to 48" wide as thin as .010" in all commercial finishes and tempers.

rection of Gene Roller. The firm makes bonding mortars, castable refractories, fire brick, insulating cements, blankets, and blocks.

NEW PLANTS

Reaction Motors Inc., a division of Thiokol Chemical Corp., Denville, N. J., has established a branch plant on the property of Hunter-Bristol Corp., another Thiokol division, at Bristol, Pa. The branch will manufacture liquid engine powerplants, called Guardians, for the Navy.

Ohio Valley Div. Inc., Eutectic Welding Alloys Corp., Flushing, N. Y., has opened a new warehouse and service center at 206 W. Mound St., Columbus, Ohio. It will be managed by V. J. Ridgway. Eutectic's entire line of welding equipment will be stocked.

Black & Decker Mfg. Co. Towson, Md., opened its new sales warehouse in Mexico City at Guaymas No. 33-2. Jesus Mendoza will continue as Black & Decker's Mexican sales manager. The warehouse will expedite B&D's electric tool and accessories sales and service.

Reynolds Aluminum Containers Ltd., Toronto, Ont., is operating a plant at 151 Bartley Dr., North York, Ont. The plant has 15,000 sq ft of floor space and will manufacture aluminum bakery supplies, frozen food containers, and take-out containers. The firm was formed recently when Reynolds Aluminum Co. of Canada Ltd. acquired Aluminum Foil Products Ltd.

Charles Bruning Co. Inc., formerly of Chicago, has opened a new plant and office in Mt. Prospect, Ill. The 301,000 sq ft building houses the company's national headquarters, its Copyflex manufacturing operations, its midwest regional offices, and a paper converting plant.

Alloy Steels Inc., Detroit, will open a steel and aluminum warehouse early in September at 2531 Needmore Rd., Dayton, Ohio. Edmond Heaney will be the manager.

This new OLIVER-FARQUHAR
O.B.I. Mechanical Gap Press

whisper quiet...

smooth running...

fast setting...

for dependable high production

You'll want new Oliver-Farquhar O.B.I. Mechanical Gap Presses for blanking, forming, drawing, bending and assembling operations. Designed and built into these O-F presses are features such as these . . .

- Rigid welded rolled steel frame with side members of uniform thickness.
- Box type slide construction with long gibs and gibways—constant, dependable alignment.
- Pneumatic counterbalance cylinders—slides and dies "float" to reduce shock.
- Continuously rotating low inertia type clutch—higher cycling, cooler operation, low maintenance.
- Adjusting screw fully-guided, large-diameter, long-barrel type—easy adjustment at floor level.
- Built to J. I. C. (Joint Industry Conference) Standards—for in-service uniformity.
- Available in four models—75, 110, 150 and 200-Ton capacities.

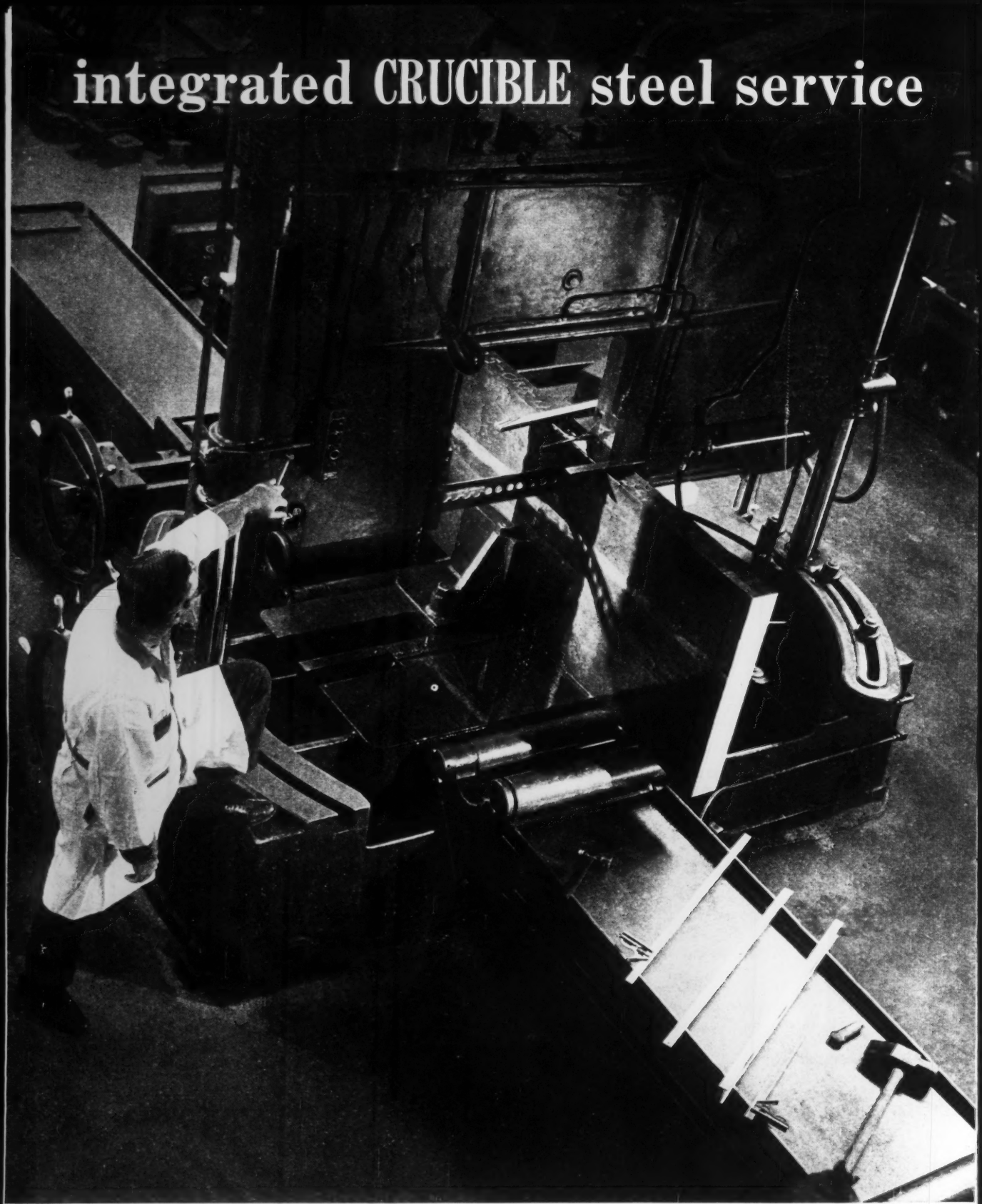
Write, wire or phone for complete details on the new, heavy-duty, Oliver-Farquhar O.B.I. Mechanical Gap Presses now available for delivery.

A. B. FARQUHAR DIVISION
The Oliver Corporation
Press and Special Machinery Departments
York 50, Pennsylvania

OLIVER Farquhar PRESSES

Also Manufacturers of Farquhar Conveyors

integrated CRUCIBLE steel service



The customer needed plastic mold steel cut to his specs as fast as he could get it. The Crucible warehouse confirmed his order, gave him immediate delivery because it had both the steel and the saw (big 24" x 42" hacksaws which can slice a 40" block in 4-4½ hours).

maintains a variety of local facilities for handling customers' special requirements

"We *regularly* rely on the Crucible warehouse's equipment. Why, it would take us all day to cut steels they can cut in minutes. We've tried to do these cutting jobs ourselves and, frankly, we lose money nearly every time."

This purchasing agent's words are probably typical because countless companies, all over the country, rely on the 27 local Crucible warehouses for handling their special needs. Unusual cutting of specialty steel grades and sizes is just an example. Or, if a warehouse can't handle extras, such as forging, grinding, machining, boring, polishing, etc. itself, it arranges to have them done conveniently and economically outside.

It's entirely possible that your plant has these facilities. Even so, it can pay you to find out what the local Crucible warehouse has to offer. As one materials buyer put it:

"We have a 'get to know the suppliers' policy. I've visited the Crucible warehouse personally and made a list of its equipment. Here it is – under 'Suppliers' Facilities.' Two weeks ago, when all our saws were tied up, we had the Crucible warehouse cut the steels. They did it immediately, so my list paid off."

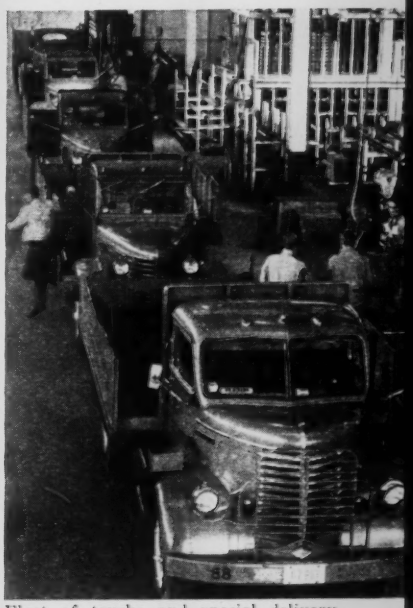
All Crucible warehouses maintain stocks, services and facilities to serve you. If you'd like to know more about them, phone or visit the warehouse nearest you – *any time.* Its facilities and services are part of Crucible's integrated operation, from ore to mill and warehouse delivery to you. *Crucible Steel Company of America, Dept. PI 15, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

MONTHLY STOCK LIST

Keep up-to-date on the specialty steels available—when they're available! Ask your local Crucible warehouse to send you its monthly stock list.

Customers' Master Files quickly give Inside Account Salesmen details on your receiving schedules and special requirements.

Inside Account Salesmen keep reference sources handy — give you fast breakdowns of analyses, or heat-treating, machining data.



Fleet of trucks and special delivery vehicles maintained at each warehouse ensure prompt, nearby deliveries.

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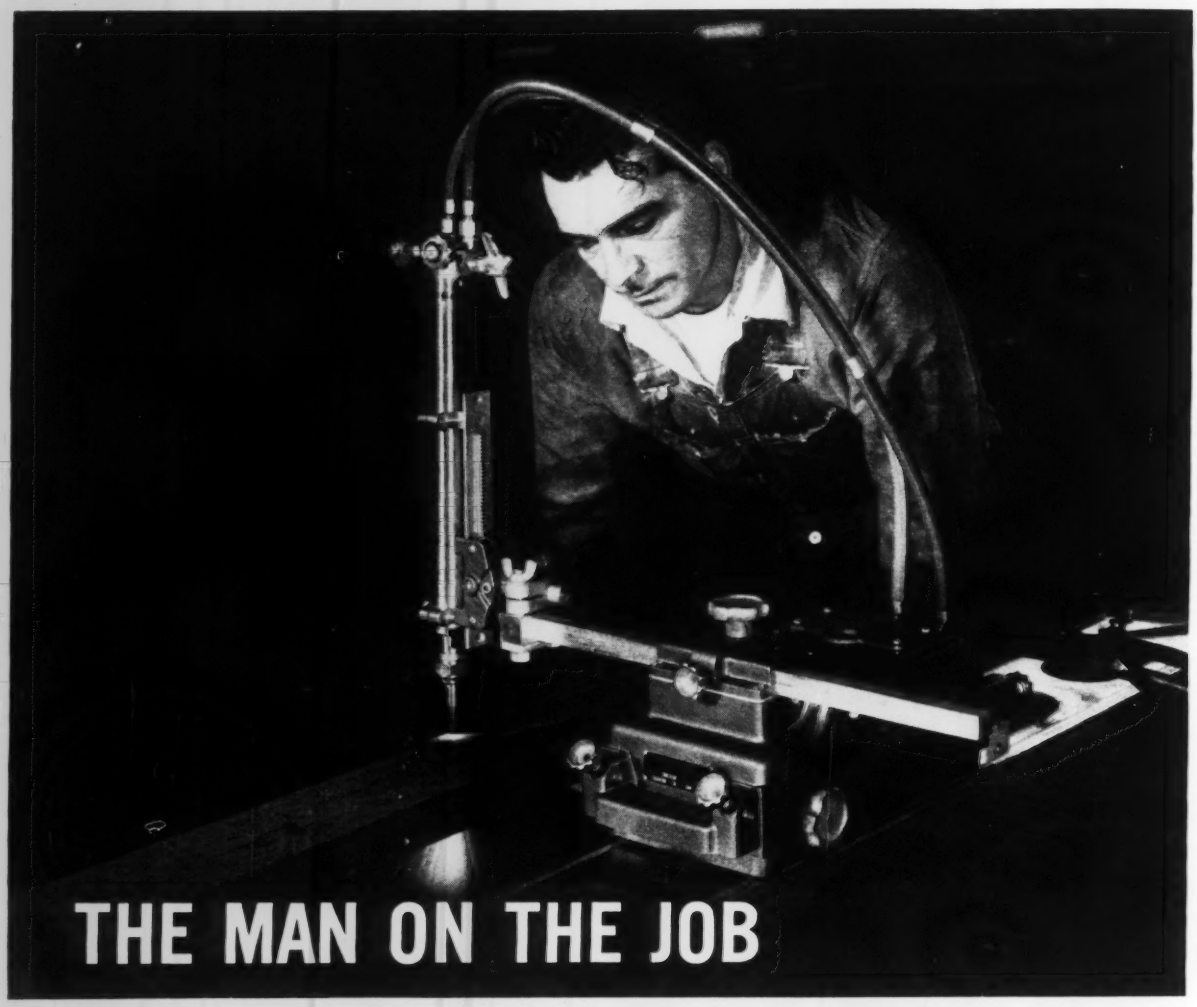

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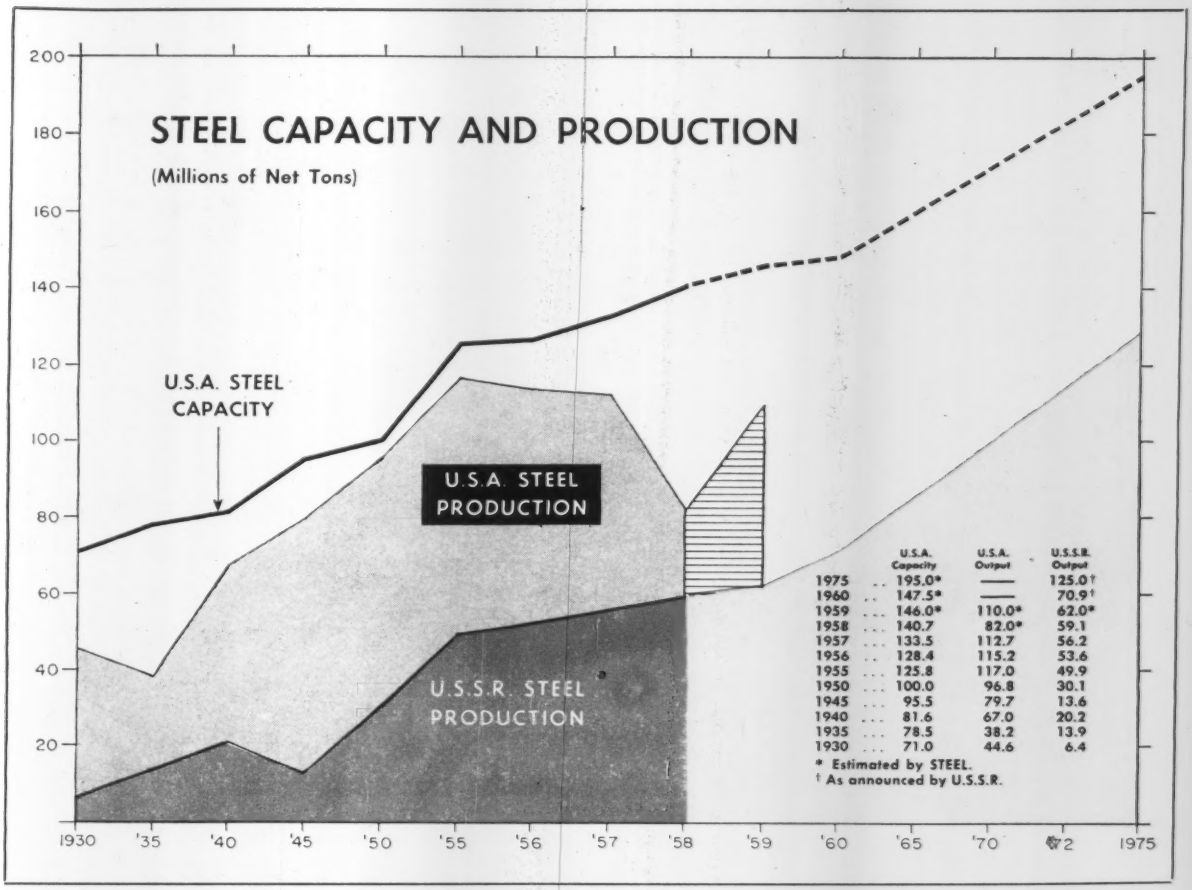


	U.S.A. Capacity	U.S.A. Output	U.S.S.R. Output
1975	195.0*	——	125.0†
1960	147.5*	——	70.9†
1959	146.0*	110.0*	62.0*
1958	140.7	82.0*	59.1
1957	133.5	112.7	56.2
1956	128.4	115.2	53.6
1955	125.8	117.0	49.9
1950	100.0	96.8	30.1
1945	95.5	79.7	13.6
1940	81.6	67.0	20.2
1935	78.5	38.2	13.9
1930	71.0	44.6	6.4

* Estimated by STEEL.
† As announced by U.S.S.R.

SPECIAL REPORT:

Soviet Steel Industry

STEEL's Editor-in-chief, Irwin H. Such, visited the Soviet Union as a member of a 19-man delegation of American steelmen (STEEL, June 16, 1958, p. 48). This is his report on economic and technical developments in the USSR and appraisal of their significance.

BEFORE his death in 1924, V. I. Lenin said that without heavy industry it is impossible to uphold the independence of a country; without heavy industry, the Soviet system may perish.

Now, more than 35 years later, the USSR is still pursuing the Leninist policy of building up its industrial strength with the ultimate and stated objective of catching up with and surpassing the U. S.

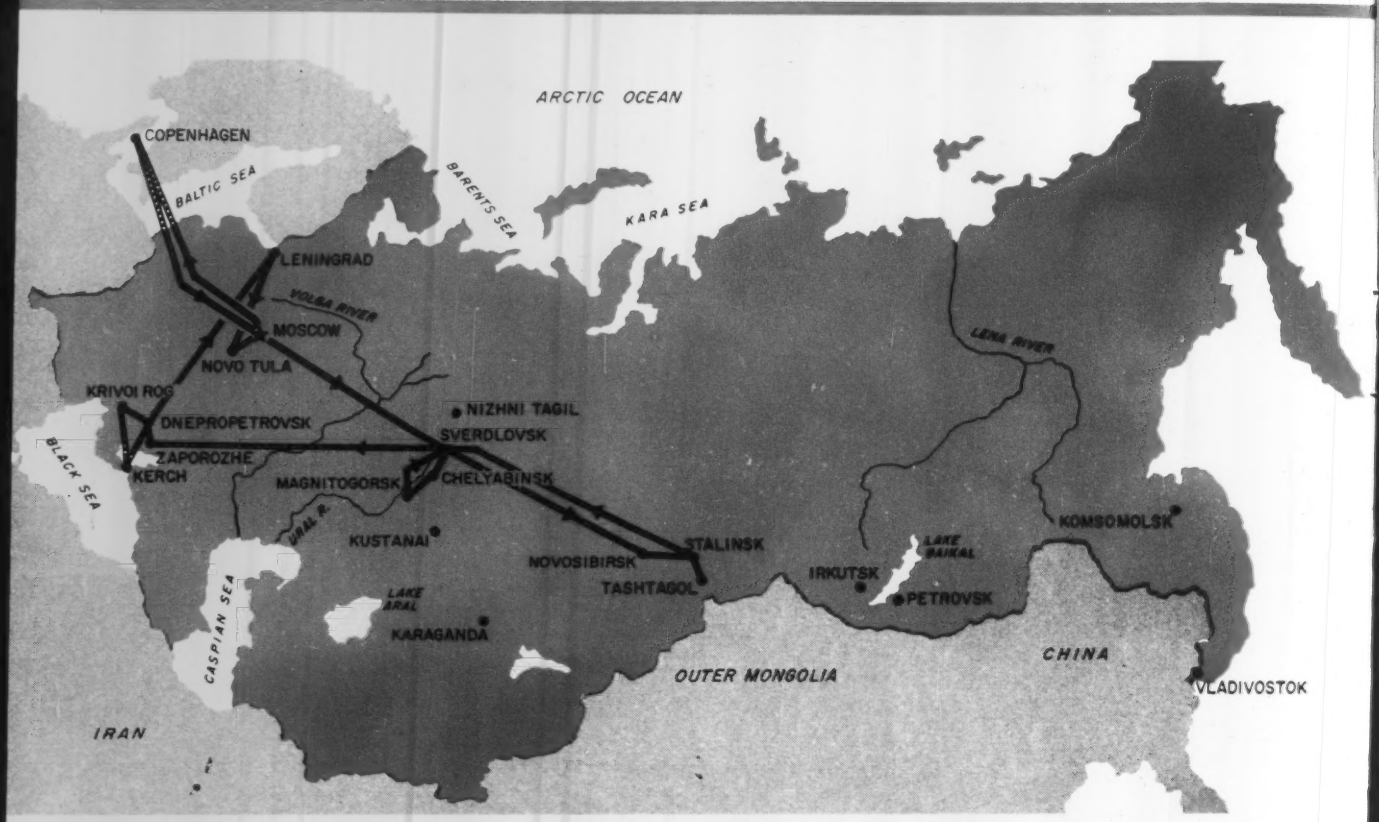
The backbone of its heavy industry is steel. So the Soviet planners have gone all out in expanding capacity and getting the most out of their equipment.

In 1960, projected production of 70.9 million net tons will still be less than half the 147.5 million U. S. plants will be able to produce.

But by 1975, the USSR will be able to turn out 70 per cent as much steel as the U. S. if it succeeds in achieving its goals and if the U. S. adds 47.5 million tons of new capacity.

The gap is narrowing.

In the early 1920s, the USSR could make only about 5 million tons of steel, or a little more than U. S. Steel's Gary Works. Production in 1930 was still only 6.4 million tons when the Soviet Union launched its series of five-year plans. By 1940, production had



been pushed to 20.2 million tons.

The Germans destroyed about 6 million tons of capacity in the Ukraine in World War II. The plants have been rebuilt and expanded. This year, the Soviets expect to produce 59.1 million tons, compared with U. S. production of about 82 million tons.

Goals Unrealistic

While the Soviets have made remarkable progress in expanding their steel industry, they are having trouble meeting target dates.

The sixth 5-year plan (1956 through 1960) was adopted in February, 1956. On Sept. 25, 1957, the government announced that it would be scrapped.

Actually, the goals of the 1960 plan were unrealistic, and the Soviet hierarchy decided that a combination of long term goals and short term planning would be more practical.

More than 30 commissions set up by the USSR State Planning Committee are at work on a new, seven-year plan (1959-65) for the development of the national economy. Personnel include prominent scientists of the Academy of Sciences and other scientific and research organizations, as well as members of the State Planning Committee.

The new plan continues to give priority to heavy industry with special emphasis on steel, nonferrous metals, chemicals, rubber, oil and gas, and railroads.

So far, the Soviets have found it easier to expand steelmaking plants in European USSR and the Ural area of western Siberia.

Seven New Blast Furnaces

Of the seven new blast furnaces scheduled for completion in 1958, two are in the Urals (Chelyabinsk and Orsk) and five are in the Ukraine (Zhdanov, two; Dnepropetrovsk, Yenakeyevo, Krivoi Rog, one each).

Steelmaking capacity, of course, is being added in the same areas. Magnitogorsk, for instance, will be expanded from 6.6 million to about 10 million tons. The big Dnepropetsstal electric furnace steel plant at Zaporozhe, with a capacity of 1 million tons of alloy, stainless, and tool steels, will have two new furnaces in operation in December and a third in the first quarter of 1959.

The long range objective has not been changed: Stimulate development of the vast areas farther to the east in Siberia. Three projects, each with proposed capacity of over 4 million tons, stand out:

1. West Siberia Metal Works: It is being constructed 10 miles west of the present steelworks at Stalinsk in the Kuznetsk basin. It will have four blast furnaces, 550-ton open hearths, bessemer converters, and Linz-Donawitz oxygen converters.

Facilities Visited by American Steelmen

CHELYABINSK—Ural Area

Steel Capacity: 1,892,000 net tons annually. Three 400 ton, three 200 ton, and five 110 ton open hearths have capacity of 1,650,000 tons. Five 44-ton electric furnaces have capacity of 242,000 tons. Will add open hearths and electric furnaces.

Pig Iron Capacity: 2,750,000 tons annually. (Four blast furnaces, fifth building). Iron ore from local mines.

Coke: Six batteries; 10 to 12 new batteries planned. Coal 65 per cent Kuznetsk, 35 per cent Karaganda.

Mills: Blooming mill, billet mill, five bar mills.

Products: Carbon, alloy, and stainless rounds and squares 3/8 to 7 in.

Employees: 20,000, including housing construction.

MAGNITOGORSK—Ural Area

Steel Capacity: 6,600,000 tons annually. Twenty-eight open hearths (twenty-one 440 ton, four 220 ton, three 275 ton). Plan additional open hearths and possibly oxygen converters to expand capacity to 9,900,000 tons.

Pig Iron Capacity: 5,500,000 tons annually. Eight blast furnaces. Plan four new furnaces by 1965 to bring capacity to 8,800,000 tons. Iron ore from local mines; production 13,250,000 tons annually. Thirteen sinter lines produce 26,000 tons a day; four new lines planned.

Coke: Ten batteries producing 15,680 tons per 24 hours. Four new batteries planned. Coal 65 per cent Kuznetsk, 35 per cent Karaganda.

Rolling Mills: Two continuous blooming and billet; one structural; one skelp; three bar; one 14 stand, 4 strand rod; one 66 in., continuous hot strip; one 66 in., 3 stand cold reduction; one 5 stand, cold reduction tin plate. Under construction: One 49 in. slabbing mill and one 98 in. hot strip mill; Sendzimir galvanizing line.

Products: Structurals, bars, hot and cold rolled sheets, galvanized sheets, tin plate, strip mill plates, light rails, wire.

Employees: 28,000, excluding mine workers, but including 380 in offices.

STALINSK—South Central Siberia

Steel Capacity: 3,300,000 tons annually. Fifteen open hearths (eleven 420 ton, four 210 ton). Two 16.5-ton electric furnaces. New integrated plant under construction 10 miles east of Stalinsk.

Pig Iron Capacity: 2,750,000 tons annually. Four blast furnaces. Iron ore from local mines.

Coke: Six batteries. Coal from Kuznetsk basin.

Rolling Mills: One tandem blooming; one heavy rail and structural; one tandem 84-in. plate; one billet; one light structural; three bar.

Products: Rails, structural shapes, plates, bars.

Employees: 28,000, including 17,000 in mill, 9000 in mines, 2000 in offices and repair shops.

ZAPOROZHE—Zaporozhstal Plant

Steel Capacity: 2,970,000 tons annually. Twelve open hearths (ten 220 ton, two 440 ton).

Pig Iron Capacity: 2,865,000 tons annually. Five blast furnaces. Iron ore: Krivoi Rog, six sinter lines with annual capacity of 4,600,000 tons.

Coke: From nearby plant with six batteries of 69 ovens each. Coal from Donets Basin.

Rolling Mills: One universal slabbing, one 66 in., continuous hot strip; one 66 in., 3 stand cold reduction; two 66 in., reversing cold reduction; one 48 in., cold reversing, cold reduction; tinning facilities and cold mills for 20 in. (maximum width), hot dip tin plate.

Products: Hot and cold rolled sheets, tin plate.

Employees: 16,500.

ZAPOROZHE—Dnepropetsstal Plant

Steel Capacity: 1,050,000 tons annually. Sixteen electric furnaces (seven 55 ton, three 33 ton, balance 27.5 and 11 ton).

Rolling Mills: One blooming (900 mm reversing); three bar mills (one 500 mm, one 325 mm, one 280 mm).

Products: 350 varieties, including 400,000 tons ball-bearing steel annually, 132,000 tons stainless steel, 27,500 tons transformer, and tool steels.

Employees: 11,000.

KRIVOI ROG—Ukraine

Steel Capacity: 1,000,000 tons annually.

Pig Iron: 1,850,000 tons annually. Three blast furnaces, fourth under construction. Iron ore: Local. Sinter: 2,750,000 tons annually.

Coke: 2,200,000 tons.

Products: 500,000 tons shapes, 320,000 wire.

IRON ORE MINES—Ukraine

Kerch: Kamush Burun open pit iron ore mine and beneficiation plant. Employment: 600.

Krivoi Rog: Gigant mine and Southern Beneficiation Combine.

Krivoi Rog: Mining machinery plant: Makes drills, compressors, ventilating equipment, pumps, hoisting equipment, and rotary car dumpers. Employment: 3000.

NOVO TULA—Moscow Area

Plant, largely for experimental work, has two small blast furnaces, open hearths, an electric furnace, oxygen converter, and a Junghans-type, continuous casting machine.

LENINGRAD—Baltic Area

Mechanobr Institute: Studies ores, including ferrous, manganese, nonferrous, rare metal. Coordinates work with smaller institutes at Sverdlovsk and Krivoi Rog. Employs 800 on research and 700 on equipment design.

SVERDLOVSK—Ural Area

Uralmash Machine Plant: Builds blast furnace, ore mining, sintering, steel rolling mill, extrusion, crushing and grinding, and oil well drilling equipment. Facilities include open hearth and electric furnaces; heavy forging presses; large machining and assembly shops. Employment 16,000.

Uralmechanobr Institute: Studies ferrous and nonferrous ores of Ural area and designs plants for ore treatment. Employment of 600 includes two doctors of philosophy, 19 doctors of science, 350 engineers, and 175 workers with secondary technical education. Employment will be doubled when third building is completed in 1959.

Finished products will include hot and cold rolled strip, electrolytic tin plate, and structurals. Operations will start in 1960.

2. Karaganda Iron and Steel Works: Under construction in the Karaganda coal basin, it will be completely integrated. Products will include hot and cold rolled sheets and strip and tin plate. Completion is scheduled for 1964.

3. Lake Baikal Steelworks: Construction on this integrated plant 1200 miles east of Stalinsk on the Trans-Siberian railroad will be started in 1959. Products will include plates and sheets. A structural mill will be added later. The plant will serve industry locally and shipbuilding yards on the east coast.

The inability of the Soviets to meet earlier goals and changes in plans makes it difficult to predict growth figures. The Soviet government openly admitted on Jan. 20, 1957, that it could not fulfill its expansion plans. As it turned out, 1957 production of 56.2 million net tons fell short of meeting the target for the year by 3.9 million tons.

The original goal of 75.3 million net tons for 1960 under the sixth 5-year plan also will not be met. Chairman I. E. Maksarev of the USSR Scientific & Technical Committee told the American steel delegation that 1960 production would be 70.9 million tons, or 11.8 million tons above the 1958 figure.

Technology Is Advanced

Technologically, Soviet steelmen have a world-wide acquaintance with the latest steelmaking methods and are willing to take chances on new techniques that promise increased production and lower costs.

They have shown a remarkable aptitude for copying the better equipment designs and operating practices of U. S. and European steelmakers and incorporate significant improvements of their own.

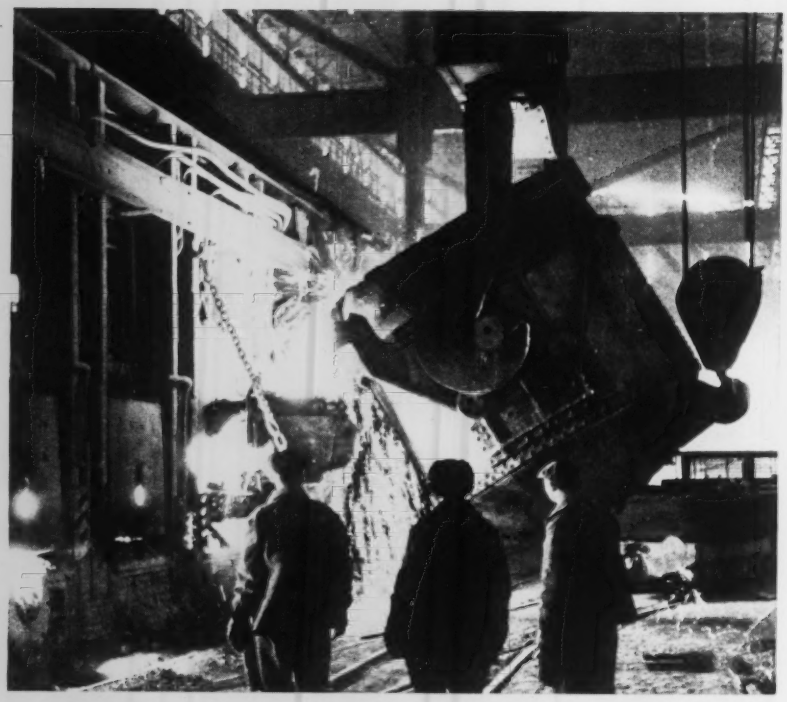
Raw Materials Adequate

The USSR has reserves of iron ore second only to those of the U. S. On Jan. 1, 1956, potential iron ore reserves were estimated at 24.7 billion metric tons. Known reserves were estimated at 27.1 million tons.

Some ores have an objectionably high zinc content. Others are high in silica and low in iron. So steel industry is dependent largely on inferior or high cost ores.

Extensive beneficiating and sintering facilities have been installed, which have contributed to a much higher blast furnace output than ours.

The Soviets face a formidable problem in providing enough ore to achieve their steel production goals. Planned are six new magnetic concentrating plants with total capacity of 30 million tons of concentrates. The problem is accentuated by lack of scrap. Open hearth charges average 35 to 65 per



To step up output, Soviet steelmakers use longer lasting magnesite-chrome refractories; double heat, 440 ton open hearths; and double ladles with two stoppers. A time saver at Zaporozhstal plant is this permanent spout for charging pig iron into open hearths

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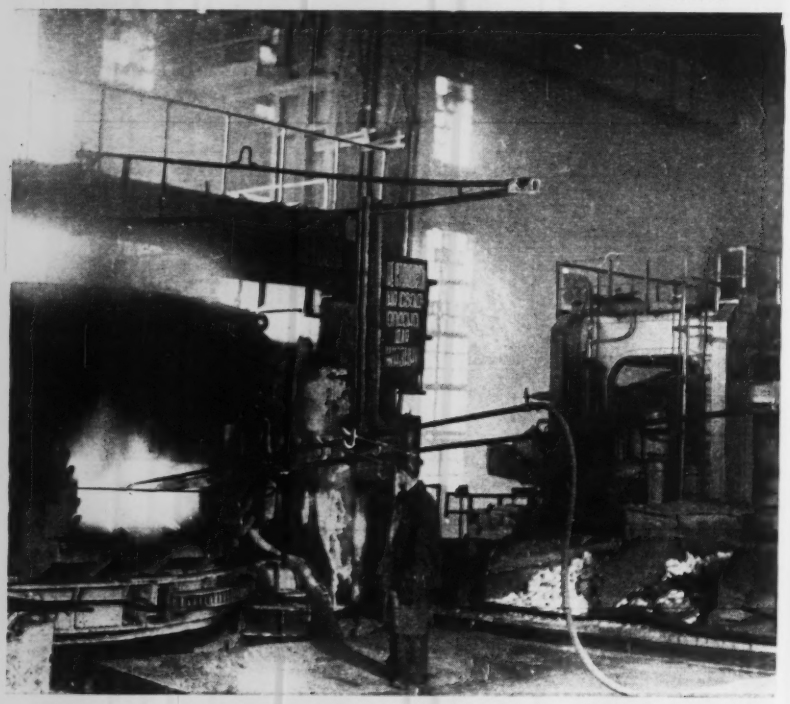


This 55-ton electric furnace at the Dnepropetsstal alloy steel plant at Zaporozhe uses oxygen and hearth slides forward for open-top charging. Most Soviet electric furnaces are small and side-charged, but 220-ton furnaces are planned

cent pig iron, vs. the 50-50 practice in this country.

The USSR also faces the difficult problem of supplying quantities of good quality coke at reasonable cost. Seventy-five per cent of its coal reserves are in Siberia, far from the principal areas of consumption in the Urals and European USSR. Magnitogorsk and Chelyabinsk must still haul 65 per cent of their coal 1200 miles from the Stalinsk area. The balance comes from the Karaganda basin to the southeast. Ukraine plants get their coal from the Donets basin.

The Academy of Sciences is experimenting with gas coal in place of coking coal. The process involves pelletization of the coal and charging it into the ovens wet.

Coke ovens are patterned after American designs, measuring 16 in. wide, 14 ft high, and 42 ft long. Future ovens will be 50 per cent larger. They will be 16.4 ft high, 49.2 ft wide, and 17.5 in. wide.

Switch to Sinter

Like our steelmakers, those in the USSR are switching to self-fluxing sinter as an effective means of increasing blast furnace production.

Strength of the sinter is stressed more than reducibility.

Self-fluxing sinter is a mixture of ground ore, coke, and limestone which fuses into a firm clinker when the coke is fired.

The Magnitogorsk plant has thirteen, 540-sq ft, continuous sintering lines. The hot sinter drops into waiting railroad cars and is taken to the blast furnaces where it is charged while still hot. Four new 800 sq-ft lines are under construction.

One Magnitogorsk furnace with a 26 ft 4 in. hearth and working volume of 48,000 cu ft (measured from the center line of the iron notch to the large bell in open position) produces 2500 net tons of iron a day. Burden is 93 per cent self-fluxing sinter and 7 per cent coarse ore. The coke rate is 1300 lb per ton of iron.

This furnace operates on blast pressure of 31 psi, top pressure of 11 to 13 psi, blast temperature of 1650° F, and blast moisture of 9 to 11 grains per cubic foot.

High top pressure is standard.

The Soviet steelmen say it results in lower coke consumption, less flue dust, and greater iron production. Chelyabinsk furnaces operate on 22 lb top pressure.

Relatively high slag volume (1100 lb per ton of iron at Magnitogorsk) is indicative of the relatively low iron content of the burden. At Magnitogorsk, sinter averages 52 per cent iron. But the furnaces are making double the amount of iron they were designed to produce.

Seven blast furnaces scheduled for completion this year will have 29.8-ft hearths and working volume of 60,680 cu ft. All will have carbon lined hearths and boshes. The furnaces are expected to turn out 3000 tons a day, or over 1 million tons a year.

One furnace at Chelyabinsk was started in January this year and will be completed in October. Subassemblies fabricated at the site are lifted into place by a huge crane to speed construction.

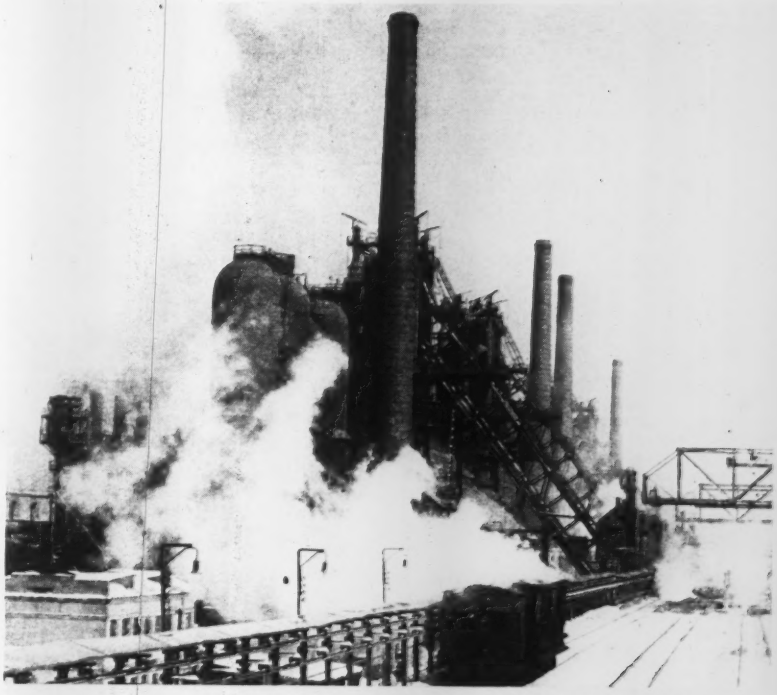
After 1958, the Soviets plan to build furnaces with 34.4-ft hearths and working volume of 77,680 cu ft. They will have carbon hearths, carbon boshes, and carbon in the stack 16 ft above the mantle.

Each furnace will have three stoves with automatic changing. No transfer or scale cars will be used. Stockhouses will have belt conveyors and will be operated automatically. Output is placed at 5000 tons a day or 1.8 million tons a year.

Soviet steelmen apparently have decided the blast furnace is here to stay for many years. These are the trends:

1. One-hundred per cent use of self-fluxing sinter.
2. Oxygen enrichment of the blast (now being used in making ferromanganese).
3. Constant humidity blast.
4. High top pressure of 22 psi.
5. Completely automatic operation, including regulation of the blast and weighing of the feed.
6. High blast temperatures (1830° F, vs. 1450 to 1650° now).

The Soviets expect to depend primarily on the open hearths, electric furnaces, and the L-D (oxygen converter) process for making steel. Major dependence will be on conventional open hearths, but they will be double



Blast furnaces built at Stalinsk, Siberia, in the 1930s have been modernized with automatic controls. They operate on high top pressure (10 to 12 psi) and controlled moisture. Automatic charging includes picking up material and weighing it in scale car

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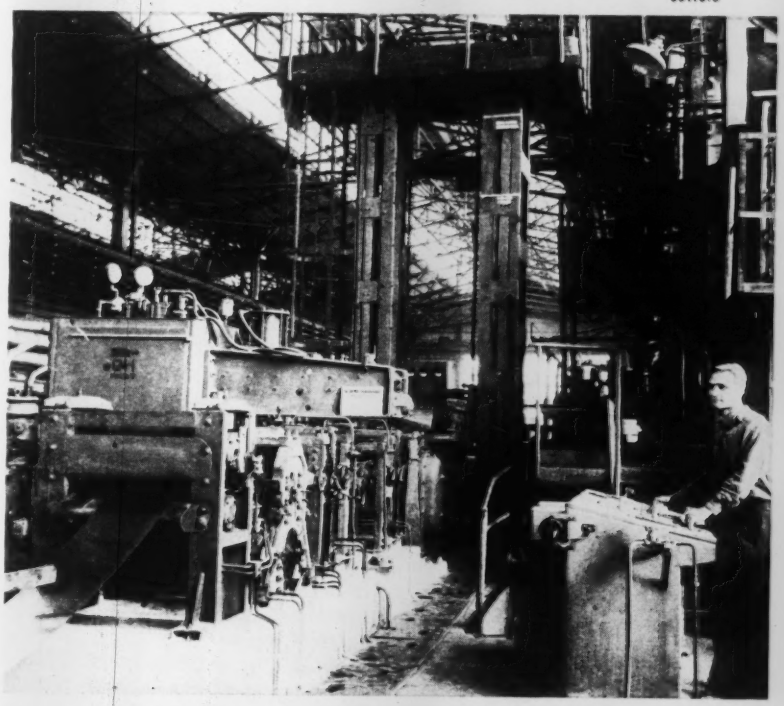


Most Soviet rolling mill equipment was built prior to World War II and is obsolete by American standards. But a new, 98-in. strip mill is being built at Magnitogorsk and others are planned. This electrolytic tin plate line at Zaporozhstal is limited to small coils

Sovfoto

"For our Motherland let us exceed our 1958 goal by . . .

Signs outside Russian plants urge workers to boost production and win bonuses. Photos taken by STEEL's editor-in-chief, Irwin H. Such, outside Zaporozhstal steel plant at Zaporozhe in the Ukraine.

	1955 OUTPUT	1956 OUTPUT	1957 OUTPUT	1958 OUTPUT†	1960 GOAL*
Coal (million net tons)	430.0	472.0	509.0	536.8	652.0
Coke (million net tons)	48.0	51.4	53.5	54.6	71.0
Petroleum (million net tons)	88.1	92.2	108.0	115.7	148.5
Electric Power (billion kw-hr)	170.0	192.0	210.0	200.4	320.0
Natural Gas (billion cubic meters)	10.3	13.0	20.2	27.2	40.0
Iron Ore (million net tons)	79.1	85.8	92.6	92.8	131.6
Pig Iron (million net tons)	36.6	39.4	40.7	41.8	58.3
Steel Ingots (million net tons)	49.8	53.5	56.1	58.5	75.1
Rolled Products (million net tons)	38.8	41.6	44.2	46.6	58.0
Metal Cutting Machine Tools (units)	117,800	121,300	130,000	133,600	200,000
Presses & Forging Machines (units)	15,900	21,400	24,000	**	25,800
Passenger Cars & Trucks (units)	445,300	465,000	495,500	512,000	650,000
Farm Tractors (units)	163,400	184,000	204,000	213,600	322,000
Electric Locomotives (units)	194	216	270	336	550
Diesel Locomotives (units)	134	161	400	592	1,630
Freight Cars (units)	34,400	40,000	38,300	39,600	52,000
Radio & TV Sets (units)	4,024,000	4,300,000	4,300,000	4,876,000	10,200,000
Household Refrigerators (units)	151,400	224,000	309,000	352,000	635,000
Household Washing Machines (units)	87,000	195,000	377,000	**	528,000

*Goals will be revised under new seven-year plan for 1959-65. Steel goal for 1960 has been revised to 70.9 million net tons.
†Annual rate in first quarter.

" . . 60,000 (metric) tons of sinter."

heat furnaces with a capacity of 550 tons. The first two of these jumbo furnaces were built at Alchevsk (formerly Voroshilovsk) in 1956. They are also thinking about huge furnaces that would produce 1000-ton heats.

But the largest furnaces in general use have a capacity of 440 tons. Deep baths (up to 49 in.) are used to increase the amount of steel in each heat. Double heats are tapped into two ladles. Each ladle has two stoppers, to reduce pouring time. Double heats can be produced in less than three-fourths the time required for two single heats.

The Russians also have invested freely in handling equipment to reduce production delays. Example: The No. 2 open hearth shop at Magnitogorsk, with 13 furnaces, has nine pit cranes, seven charging machines, and four floor cranes—just about double the amount of equipment in most U. S. shops.

Furnaces Last Longer

As a means of extending furnace life to get out more production, they are standardizing on magnesite-chrome refractory brick for furnace roofs. With this practice, furnaces are producing 400 to 700 heats before rebuilding is necessary.

Operations are handicapped by a shortage of fuel oil and tar. Coke oven and blast furnace gas generally are substituted. The fuel handicap has been overcome by faster firing and the use of oxygen for combustion. Operators at the Zaporozhstal plant claimed a 20 per cent increase in steel production resulted from the use of about 700 cu ft of 96 per cent oxygen per ton of steel produced.

The emphasis on ever-increasing production does not mean that the Soviets are not cost conscious. On the contrary, they are constantly on the watch for ways to reduce costs and save labor. They require 25 to 50 per cent more manhours than we do to make a ton of steel.

Electric Furnaces Lag

Electric furnace practice is below U. S. standards. The lag is probably due to the emphasis on open hearth carbon steel needed for construction and equipment. Two-hundred-twenty-ton electrics are planned. Largest now: 55 tons.

Oxygen converters of Russian design make steel at Krivoi Rog. The process will also be used at new plants near Stalinsk and Lake Baikal. Vessel capacity will be 75 to 80 tons. Eventually, the Soviets expect to make 10 to 15 per cent of their steel by the oxygen process.

Vacuum pouring is used at Chelyabinsk for removing harmful gases from transformer steel and from turbine rotors cast at the Uralmash machinery plant in Sverdlovsk.

Experimental work in continuous casting is conducted at Novo Tula. One machine is also in operation at Gorki. When a second machine is added, the Soviets say all steel at Gorki will be continuously cast.

Much of the rolling mill equipment is of prewar design, from builders such as United Engineering, Demag, Schloemann, and Sack. The Russians now build most of their own equipment, but there is no indication of anything radically new in the offing. The 98-in., continuous hot strip mill being built at Magnitogorsk is similar to the one at the Fairless Works. Cold mills follow our practice.

Oddly enough, the Magnitogorsk plant has just placed a dozen hot dip tinning pots in operation. In the future, the Soviets expect to install continuous electrolytic lines. A small line at the Zaporozhstal plant handles only small, narrow coils. Galvanized sheets and strip will be made on Sendzimir type lines.

"... 18,000 (metric) tons of steel ingots."

"... 5500 (metric) tons of pig iron."

"...12,000 (metric) tons of rolled steel."

Moscow Allocates Steel

All steel produced is allocated by the USSR State Planning Committee in Moscow a year at a time with quarterly adjustments. For some time to come, most of it will be needed for bridges, powerplants, railroad locomotives and cars, farm machinery, and industrial plant and equipment. Little will be available for civilian goods until the mid-1960s when the Soviets hope to complete their heavy building program. They expect to increase flat-rolled production, including plates, to 40 to 45 per cent of total output no later than 1975.

Here is how the 46 million tons of finished steel produced this year will be distributed:

Rails	2%
Tubes	14
Structurals and Bars	60
Wire and Misc. products	5
Flat-rolled, incl. plates	19

The quality of steel produced at some plants, especially Chelyabinsk, is good. At other plants some carbon steel products appeared satisfactory for the Soviet market but would hardly satisfy American consumers.

Metalworking Miracle

The USSR has done miracles in building a strong metalworking equipment industry, including machine tools, presses, and forging equipment.

In 1940, only 58,400 metalcutting machine tools (212 of the "elephant" type) were turned out. Production in 1955 was up to 117,800, including 3541 large machines. This year, production in the first quarter was at an annual rate of 133,600 machines. Goal for 1960: 200,000.

Soviet railroads still have some abbreviated, four-wheel freight cars. Newer cars are similar to ours. Gondolas have a capacity of 66 tons.

Freight car production in 1960 is scheduled at 52,000, or about 12,000 above the 1958 figure. Diesel locomotive production is less than half the rate planned for 1960 (see table). Electric locomotive output is closer in line. Russia hopes to replace all steam locomotives by 1970.

Figures on projected production of motor vehicles are not broken down by types, but the ratio usually is three trucks to one auto.

In 1955, production was 329,000 trucks and 108,000 passenger cars. This year, truck and car production is at an annual rate of 512,000 units. The projection is for 650,000 in 1960. Two new cars are in production, the Moskvitch and the Volga.

The USSR is expanding its radio and television network, apparently for its propaganda value. Production of radios and TVs in the first quarter was at an annual rate of 4.8 million, less than half the 1960 goal of over 10 million.

Household refrigerators are still a luxury. Production is running about double the 1955 rate, but even 635,000 in 1960 would satisfy only a fraction of consumer requirements. Washing machines are even more of a rarity.

Management Decentralized

On July 1, 1957, the USSR dropped 27 ministries, including the Ministry of Iron & Steel. In their place, 103 economic councils were established on a territorial basis to manage industry. The councils are staffed by industry experts. The department of metallurgical industries, for instance, oversees all the steel plants in the area and is responsible for such problems as financing, production planning, expansion, and improvements. Plant directors report to these department heads. The council reports to Moscow.

Steel plant workers are inspired to turn out more production

BORIS NIKOLAEVICH ZHEREBIN
Director, Kuznetsk Metallurgical Combine
Stalinsk, Siberia

Profile of a Soviet Steel Plant Manager

AS DIRECTOR of the Kuznetsk Metallurgical Combine, Mr. Zherebin has one of the most important management jobs in the Soviet Union.

Under his direction are 17,000 people who work in the steel plant, 9000 in the mines, and 2000 in offices and repair shops.

He operates from a large, well-furnished office on the top floor of a building facing a large square near the plant. On the wall back of his desk is a large portrait of Lenin. On a side wall is one of Khrushchev. There is a large conference table for meetings. At the side of his desk, six telephones on a console provide instantaneous contact with department heads. On his desk is a seventh phone and an intercom microphone.

Steel plant directors like Mr. Zherebin are appointed by the Council of Ministers in Moscow on recommendation of the regional economic councils. The councils were set up when the USSR decentralized management in 1957.

Mr. Zherebin gets a monthly base salary of 4600 rubles per month ($460 at Intourist rate), plus bonuses up to 50 per cent. To earn his bonus, he must meet both a cost plan and production goals. The economic council can eliminate his bonus, if it chooses, for management shortcomings such as a high plant accident rate. He gets a car and chauffeur and a telephone at home but no other benefits except use of a private railroad car.

The chief engineer gets 4250 rubles per month, plus bonuses up to 50 per cent. The deputy director and coke and chemical department superintendent each get 3400 rubles, the blast furnace, open hearth, and rolling mill superintendents, 3200 rubles. All get bonuses up to 40 per cent.

Mr. Zherebin is obliged to operate the plant at a profit even though he does not have full control over costs and no control over selling prices. Standard cost figures on labor and materials are supplied by the regional economic council. The state allocates orders and fixes selling prices. Last year, the plant made a profit of 600 million rubles.

through a complex system of bonuses and exceedingly effective propaganda. Workers who have done an outstanding job get their pictures posted in the local house of culture or on huge billboards outside the plant or in the center of the city.

Most workers belong to the union but membership is not compulsory. Dues are 1 per cent of income. Each year, the plant contributes a sum equal to 8.5 per cent of the payroll to the union.

The union controls and operates the social insurance setup. Pensions for most workers start at 55, but men with 20 years' service in steel plant "hot shops" may retire at 50. The union also supervises kindergartens and other facilities for workers.

No Strikes

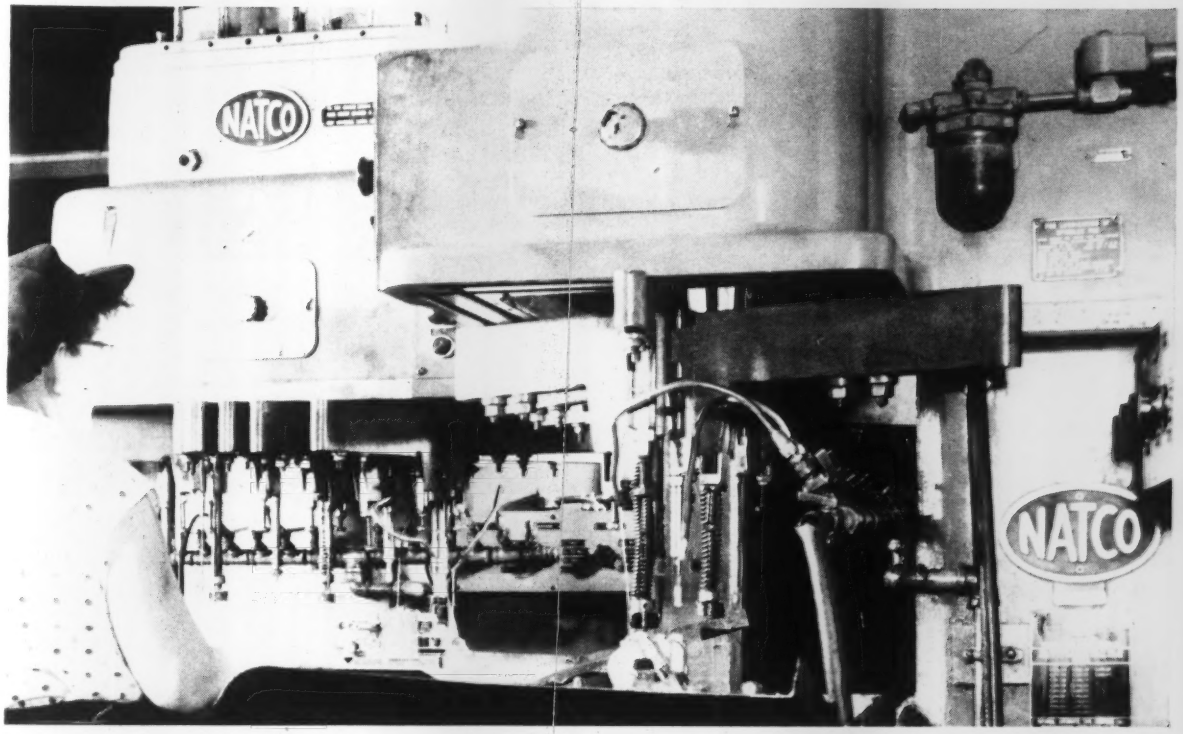
There are no strikes. Differences usually are worked out at the local level but could be taken as high as Moscow. The plant union president works full time and is paid out of union dues.

The Soviets have completely abandoned their original idea of uniform wages for all workers and now have a graduated scale somewhat similar to ours. It is difficult to assess the value of the ruble, but Soviet workers do have much less buying power than ours. Skilled workers earn a maximum of 3200 rubles a month, unskilled 700 rubles. The average is 1300 rubles.

Working hours were reduced late last year. Workers in hot shops work 8 hours four days, are off 48 hours, and repeat the cycle. No overtime is paid for Sundays. Wages are based on a 176-hour month. Workers in noncontinuous operations work 7 hours a day, 6 hours on Saturday, and are off on Sunday. Two holidays are recognized: May Day and October revolution (Nov. 7).

In plants, 20 to 30 per cent of workers are women. They are paid at the same rates as men but usually get the common labor assignments. Some are in highly skilled jobs, such as operating rolling mills.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*



Ten Natcos like these replaced 170 single spindles!

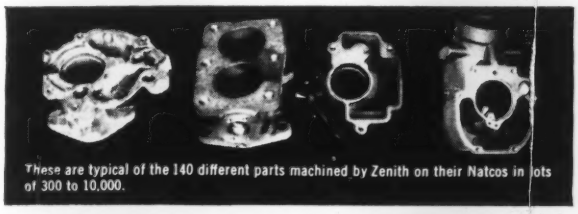
It's "reduce costs or else" in the hotly competitive carburetor business. That's why Zenith Carburetor Div. of Bendix Aviation Corp. embarked on a tooling program which resulted in substantial savings per casting machined.

Ten multiple spindle H-6 Natcos provided the greatest savings per machine dollar spent. By combining drilling and tapping operations, the Natcos eliminated the need for 170 single spindles. Look at the cost comparisons on two parts, for example—a die-cast cover and fuel bowl.

Formerly, the cover was machined by five operators using ten single spindles with ten jigs. The fuel bowl was formerly run by two operators on four single spindles using four individual jigs. Now these parts are run on two Natcos by a single operator at a direct cost savings of 81% on the cover and 70% on the fuel bowl.

Wherever hole-machining operations are performed one at a time, you'll find outstanding opportunities for cost reduction. Standard multi-spindle Natcos range from 1 hp, 10-spindle high-speed machines to giant heavy duties with 50 hp and up to 72 spindles. Natco also builds a complete line of special way-type, index and transfer machines.

A Natco field engineer can help you with your cost-reduction and production problems. Call or write today.


These are typical of the 140 different parts machined by Zenith on their Natcos in lots of 300 to 10,000.

Somewhere in Natco's experience is a money-saving idea for YOU!

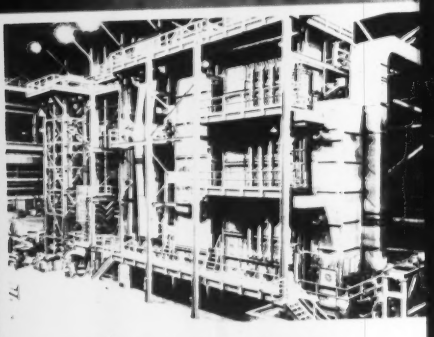
NATIONAL AUTOMATIC TOOL COMPANY, INC.

Richmond, Indiana

Natco offices in Chicago, Detroit, New York, Buffalo, Boston, Philadelphia, Cleveland and Los Angeles; distributors in other cities.

NATCO

HEAT



1. GAS/ELECTRIC tower furnace uses economical coke-oven gas.

. . . ENGINEERED BY GENERAL ELECTRIC ASSURES YOU LOWEST-COST HEAT SOURCE

A complete line of electric and gas-fired furnaces and induction heaters enables General Electric's qualified Heating Specialists to give you an unbiased solution to your heat treating problems.

Because General Electric supplies all types of Industrial Heating equipment including gas-fired and electric furnaces, induction heating units, and protective atmosphere producers and control, they can tailor a heat treating system for you which best meets your requirements. You get low first cost and low operating costs which will help pay for your system in two or three years and make substantial contributions to profit when the equipment is paid for.

Here are four examples of results achieved through heat systems engineered by General Electric (pictured below):

1. EXTRA ECONOMY is achieved by using coke-oven gas, a by-product of other manufacturing processes, in the gas-fired heat-up section of this new General Electric tin-plate annealing furnace. Electric heat is used to achieve close control of the holding and cooling sections.

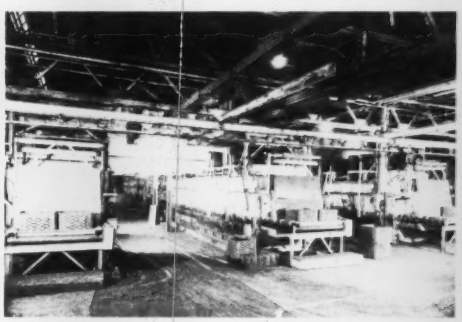
2. ADDING SUPPLEMENTARY BATCH FURNACE capacity to handle special loads of copper wire at lower cost, this manufacturer found that gas was now his best buy, so he chose a General Electric gas-fired cylindrical bell furnace and endothermic gas atmosphere producer.

3. REPLACING OIL-FIRED BATCH FURNACES with two continuous G-E electric roller hearth furnaces, a Midwest foundry cut its cycle from 4 days to 48 hours, cut man hours by 40%. They report a 35% return on investment and have recently added a third General Electric furnace of the same type.

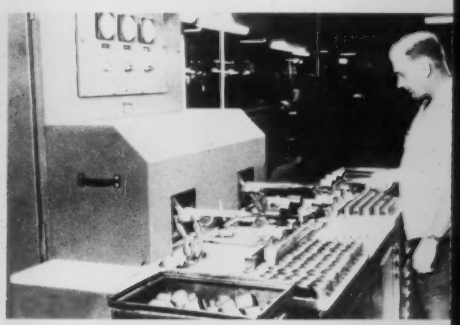
4. SCRAP LOSSES WERE CUT FROM 35% TO 2% with a G-E electronic induction heater used for brazing electric-switch housing and jet engine components. Resultant savings in manpower, materials and machine time have helped pay for the General Electric installation. Higher quality products are produced.

YOU CAN ACHIEVE RESULTS LIKE THESE with a heat modernization system engineered by General Electric to fit your needs. If you suspect that obsolete heat processing equipments are robbing you of profits, call your G-E Apparatus Sales Office. A qualified Heating Specialist will be glad to discuss your opportunities for potential savings and profits. Why not call today? Section 721-13, General Electric Company, Schenectady 5, New York.

2. RATE COMPARISONS showed gas furnace to be best buy.



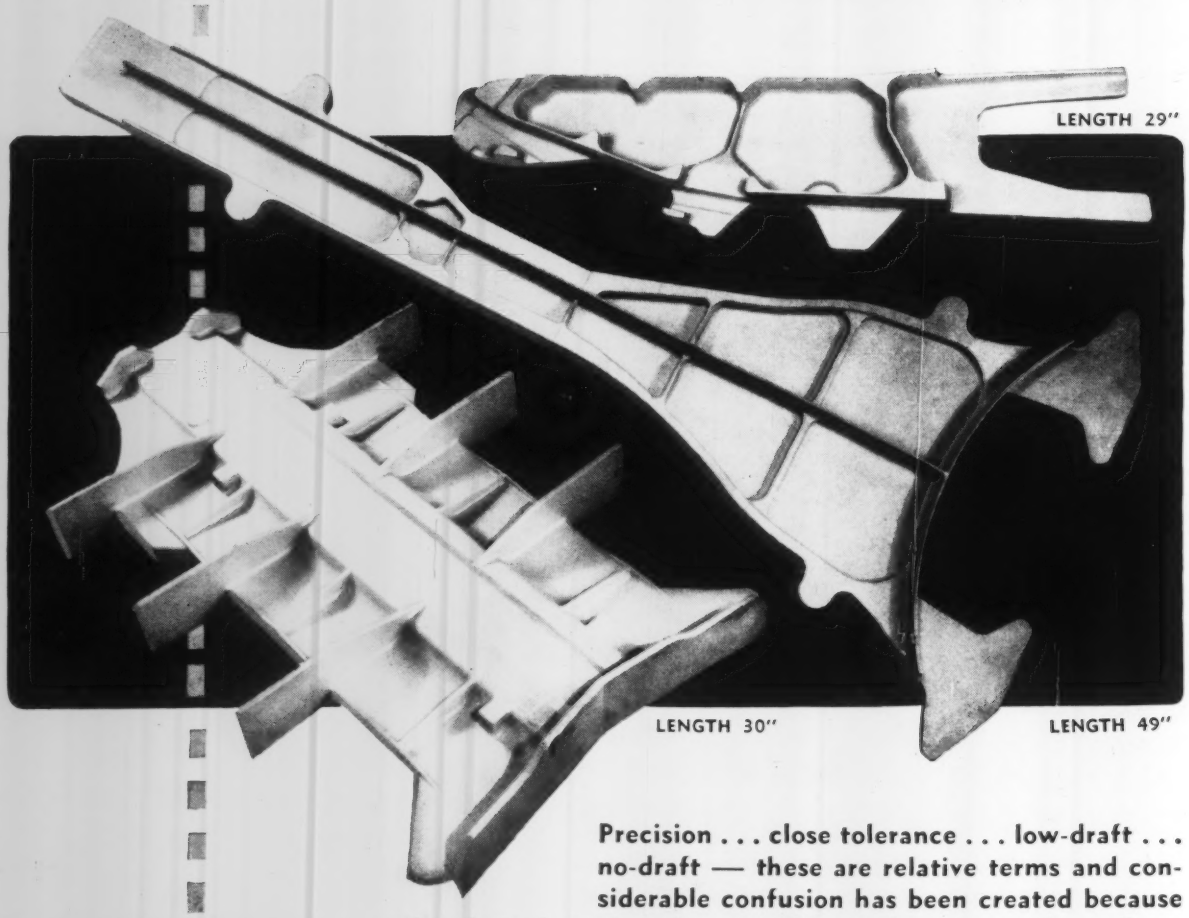
3. ELECTRIC FURNACES cut cycle from 4 days to 48 hours, cut manhours 40%.



4. INDUCTION HEATER cut scrap losses from 35% to 2%.

GENERAL ELECTRIC

PRECISION FORGINGS By WYMAN-GORDON



Precision . . . close tolerance . . . low-draft . . . no-draft — these are relative terms and considerable confusion has been created because they have been loosely used. Close tolerances on large forgings have been pioneered by Wyman-Gordon over the years. The degree of precision which is practical now becomes a question of economics.

The forgings illustrated are typical of Wyman-Gordon close tolerance forgings that have been produced in quantity. In solving problems of tolerances, design and metallurgical quality, there is no substitute for Wyman-Gordon experience.

WYMAN-GORDON COMPANY

Established 1883

FORGINGS OF ALUMINUM • MAGNESIUM • STEEL • TITANIUM

WORCESTER 1, MASSACHUSETTS

HARVEY, ILLINOIS • DETROIT, MICHIGAN

Technical Outlook

PLASTICS FOR DIES— Two new uses for hard plastics: 1. Drop hammer dies used by a major aircraft company are made from Epocast 11-D, a product of Furane Plastics Inc., Los Angeles. Weight is about one-fourth that of conventional dies, simplifying handling. 2. Plastic lined drawing dies are less damaging to decorative patterns and finishes on vinyl clad surfacing. One fabricator reports that lined dies cost 75 per cent less than all-steel dies.

STOPS CARBON IN DIES— A diecast release agent (Dylube 710) will eliminate carbon deposits because it has a high boiling and flash point, says Chemical Products Div., American Charcoal Co., Detroit. The lubricant makes the metal flow better. It is applied by brush or blow gun.

ROOF COATING COOLS PLANT— Underroof temperatures can be reduced as much as 26° F with a new coating that reflects 70 per cent of the sun's rays, says Tropical Paint Co., a subsidiary of Parker Rust Proof Co., Detroit. The coating consists of aluminum pigment in a vehicle of asphalt and oils which can be brushed, rolled, or sprayed on.

ALUMINUM UPGRADES ALLOYS— Research studies by the Navy reveal that iron-chromium (up to 25 per cent Cr) alloys containing up to 11 per cent aluminum have considerably better high temperature strength than comparable chromium alloys. They resist attack by combustion products of residual fuel oils and have excellent hot working characteristics. Disadvantage: Compared with 310 stainless, the alloys are brittle at room and moderately high temperatures.

FURNACE MELTS TITANIUM SCRAP— Greater utilization of titanium scrap may be possible through the use of a "skull" furnace in which the entire operating assembly is enclosed in a metal shell. The furnace can be maintained under vacuum or an inert atmosphere. As the scrap is melted, a skull of metal freezes on the shell and keeps the bath molten which allows addition of necessary alloys required to make a definite analysis. In operation at Republic Steel Corp., Canton, Ohio, the furnace can cast up to 2000 lb of metal.

IMPROVING STRESS-RUPTURE STRENGTH— Studies with an 80 Ni-20 Cr alloy indicate that the addition of refractory powders will increase elevated temperature strength. J. D. Burney, P. R. Mallory Co., Indianapolis, believes that the powders increase the sintered density and cause the increase. Carbon additions form a liquid phase during sintering which increases density and strength.

HIGH FREQUENCIES CLEAN SCREENS— Fine mesh (325) screens may be cleaned ultrasonically, reports Narda Ultrasonics Corp., Westbury, N. Y. Screens that are 80 per cent clogged are completely cleaned in 1 minute. The method does not distort or break the screens, reducing replacement costs.

UNIVERSITY LIQUEFIES HELIUM— Liquid helium is in production at the University of Michigan—about 5 quarts an hour. Chemists are using the material as a low-pressure refrigerant in the study of heat properties and energies of matter close to absolute zero.

WASTE TREATMENT SPEEDED— A new approach to the biological treatment of liquid plant wastes has been developed by Dow Chemical Co., Midland, Mich. Called Dowpack, it is a plastic packing material that provides a large surface to which waste-treating bacteria can adhere. It also permits a large volume air flow to supply the bacteria with necessary oxygen.

AIR AT ALL TIMES— Blast furnace downtime is reduced by using a split wind blowing system. Example: McLouth Steel Corp., Trenton, Mich., installed a selector valve arrangement to use when one blower is being serviced. The air volume is 75 per cent of that supplied when both furnaces are at peak on individual blowers. The system was installed by Dravo Corp., Pittsburgh.

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How We Beat the Cost Crisis

We Cut Product Price 20% With More Efficient Machines

Better production methods helped this company improve its competitive position. It's another case where management's attention to cost cutting paid off. This article is one of the top entries in the Cost Crisis Awards Competition. Watch for another one in next week's issue

THE JOB:

Machine Intricate Pellet Mill Dies

A FORGED steel ring die is the heart of a machine used for extruding numerous chemical and industrial products into pellets. The part is complex, with thousands of uniformly spaced, smooth, straight holes drilled into the die periphery.

At best, the part is a machining challenge—at worst it's a nightmare.

Methods engineers at Sprout, Waldron & Co. Inc., Muncy, Pa., well aware of the high cost of machining the forgings, figured they could come up with a production sequence that would cut costs and speed production.

The Answers—They substituted an automatic lathe for a turret lathe, an automatic drilling and tapping machine for a radial drill, a special gun drilling machine for a battery of single-spindle drills, an automatic chamfering machine for an upright drill press, and a semiautomatic grinder for a universal grinder.

The gun drill and the countersinking machine were designed and built by Sprout, Waldron engineers; the other new equipment was purchased.

Most Important — H. Marshall Soars Jr., vice president of engineering, says the special gun drill produced dollar gains nearly equal to all other savings combined.

Working on an automatic cycle, the gun drilling machine produces holes that are straighter and more uniformly spaced than its single-spindle predecessor. Surface finish, too, is better—20 microinches, vs. about 60 before.

Drilling jobs that used to take 90 hours on the single-spindle machines, are whipped out in only six hours by gun drilling.

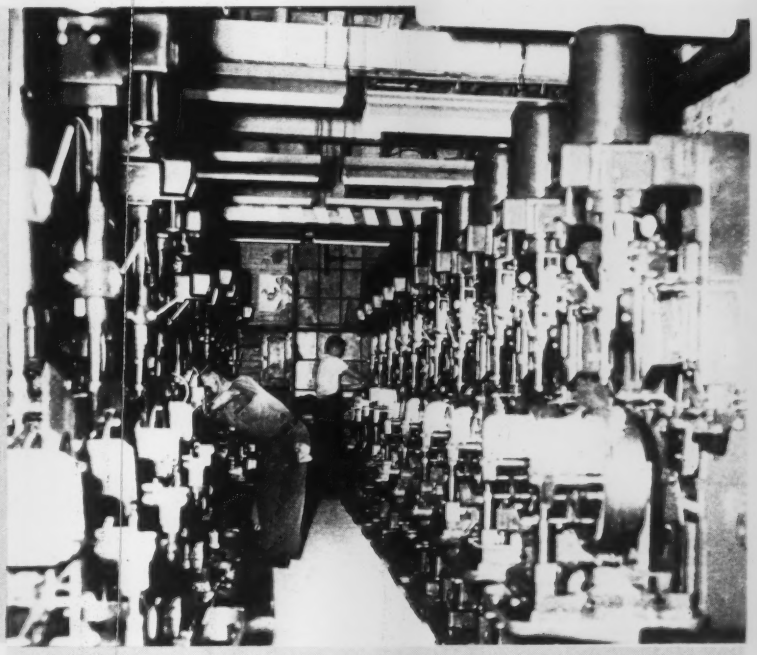
The first step in the $200,000 improvement program was taken in 1955, when management approved the gun drill development project.

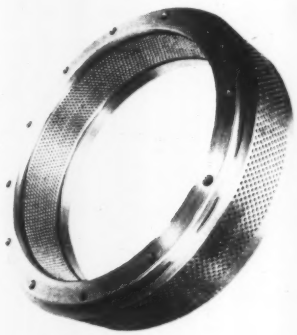
Much of the other equipment was authorized when it became apparent it would be needed to match the added capacity of the gun drill.

Mr. Soars says: "The success of the program is attested to by the fact that in the last year and a half we have been able to reduce our completed die prices by about 20 per cent." This was achieved in the face of rising labor rates and increased material costs (a switch to a less machinable, more expensive steel was made to get better hole finish and service life of the die).

OLD METHOD

1. Finish machine heat treated and roughed forging on a turret lathe.
2. Drill and tap locating bolt holes on a radial drill.
3. Spot drill, drill, redrill, and ream radial holes on single-spindle drill units. Manual index between rows. Photo at right.
4. Chamfer radial holes on die ID on manual upright drill press.
5. Harden the die.
6. Grind on a universal cylindrical grinder.



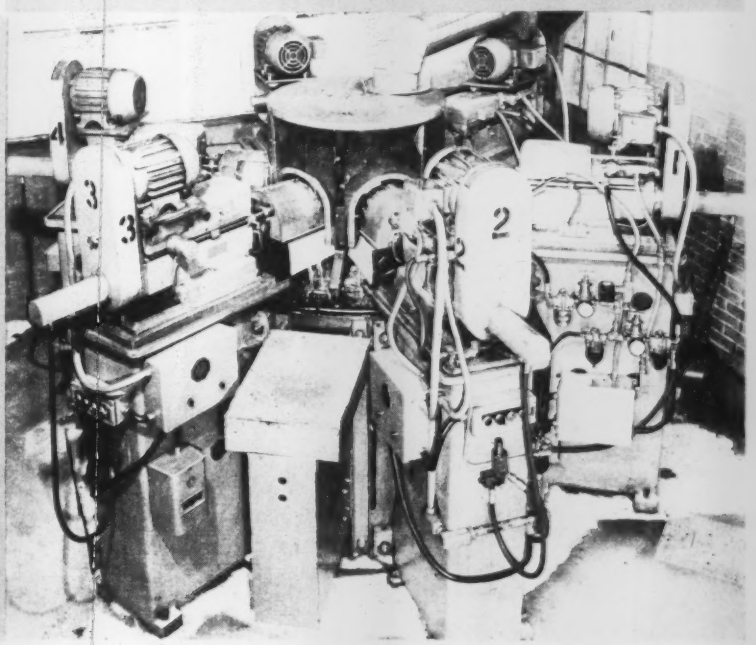


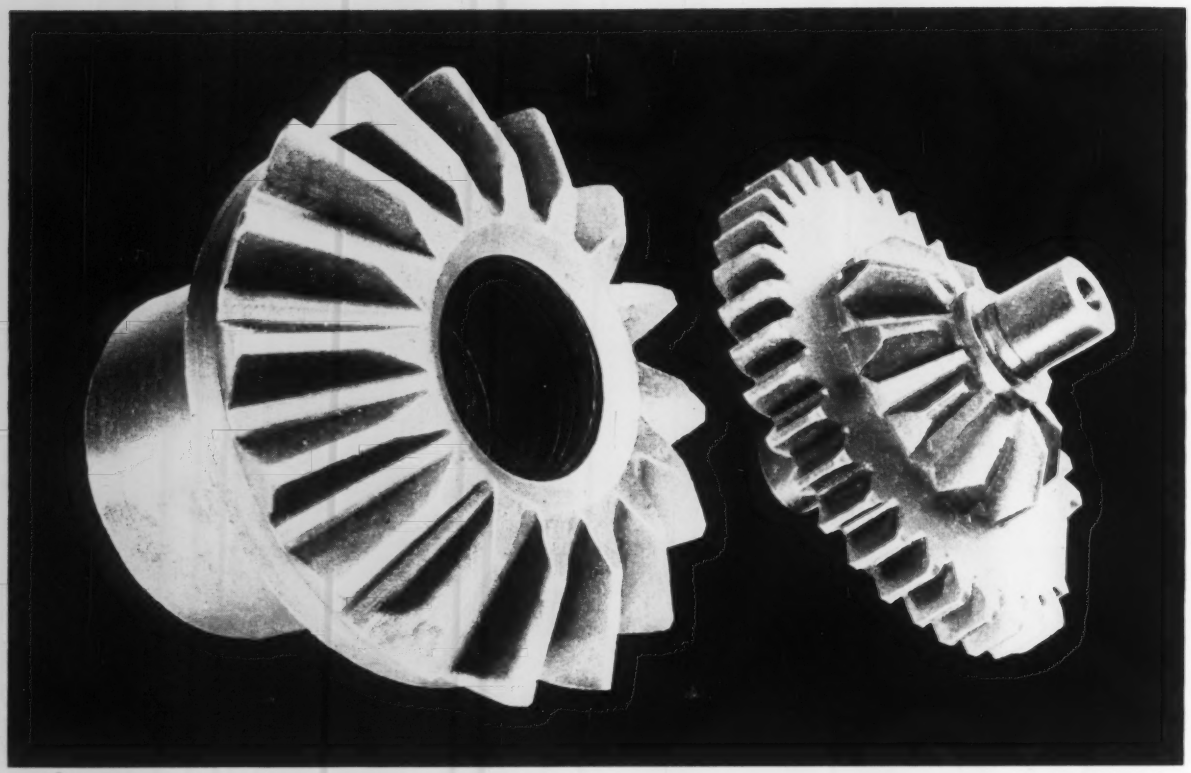
Saved:

75%	of the labor cost for lathework.
100%	of labor cost for drilling and tapping locating holes (no longer charged on automatic machine.)
50%	of labor cost for drilling radial holes.
100%	of labor cost for chamfering (no longer charged on automatic machine).
25%	of the grinding cost.

NEW METHOD

1. Finish machine on an automatic lathe.
2. Drill and tap locating bolt holes on an automatic machine with automatic index.
3. Drill all radial holes on six-spindle automatic gun drilling machine. Photo at right.
4. Chamfer radial holes on die ID with automatic machine.
5. Harden the die.
6. Grind on a semiautomatic cylindrical grinder with automatic sizing.





These gears were precision forged. The motorcycle starter gear (right) was formerly made from four separately machined parts. Bevel gears (left) are commonly produced by the process

Gear Forging Advances

Improved die practice makes it possible to produce units that do not require machining. Teeth have greater strength and scrap loss is low. Savings are best with complex parts

PRECISION gear forging—a process that minimizes machining—holds promise as an economical way to form high temperature metals, such as titanium. It will reduce costs 25 per cent in some cases.

A one-piece forged part takes the place of a part formerly requiring several machined components, often complicated. The forging has greater strength resulting from controlled grain flow.

Curtiss-Wright Corp., Buffalo, has the option to use a process developed in Germany where the absence of adequate machine tools inspired extensive developments of forging methods.

Making Dies—It is important to keep the cost down and still maintain close tolerances. Curtiss-Wright has found that excessive die costs, long a handicap, can be reduced. The dies are designed as inserts (cutting down on the requirements for expensive die steel). A simply designed mechanism holds the round inserts in place. They are changed in less than ½ hour.

Hot worked steels are used for the die materials. They are roughed out by conventional machining methods, hardened, and then finished without the need for the hand benchwork normally associated with diemaking.

The dies are highly accurate, but their life is relatively short. This disadvantage is minimized since reworks are possible at a low cost. Worn dies are completely reconditioned.

The controlling factors of die life are the same as those found in any forging operation. For instance, thin sections tend to burn the die and cause premature failure. Careful design makes it possible to shape complex forms without decreasing die life.

Conventional Forging—A screw press is used in place of the normal crank press and the action on the metal is about halfway between a

crank press and a drop hammer. Impact is a little greater than in the crank press, but not as much as in a drop hammer.

The shaped part is satisfactory for most applications without further work on the gear teeth. Normally, minimum tolerances on the pitch diameter are 0.0015 in. Careful maintenance of the die is important if close tolerances are desired.

Decarburization is controlled by using an atmosphere furnace. Controlled cooling produces a fully annealed part that does not lose its accuracy.

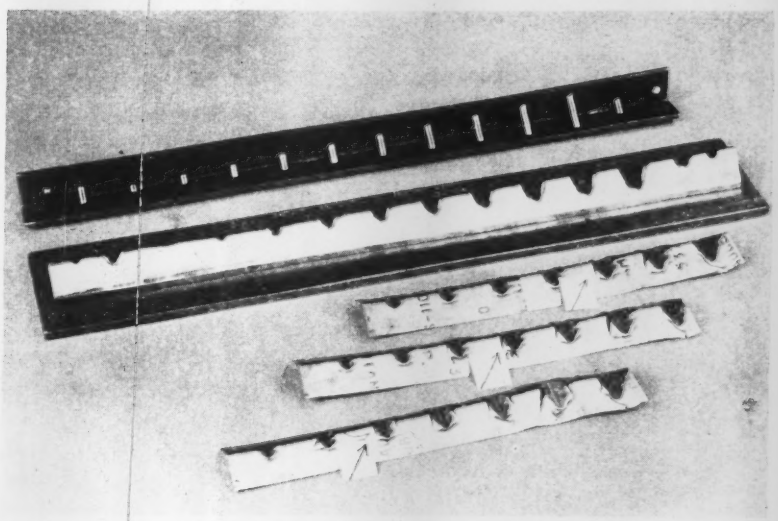
The teeth and the face of the gear are the only sections that are precision forged. The hole is machined. At the same time the back face of the gear (where flash has collected) is faced. Fixtures locate from the teeth and firmly hold the part during machining, another insurance of accuracy.

Improved Properties—Says John F. Murphy of Curtiss-Wright: "Several companies have used these gears. The tooth strength in all cases shows substantial increases over normally cut gears." He cites the case of one U. S. manufacturer that licensed a German firm to make its product. The German firm used precision forged gears which showed nearly twice the strength of U. S. gears which had been machined from a rough forging.

The preferential grain flow up around each tooth combines with the normal longitudinal grain flow to produce the increase in strength.

Progress—The process has the best potential for gears requiring multiple machining operations. For example, a motorcycle starter gear was formerly an assembly of four pieces: a spur gear combined with a bevel gear, a shaft, and a cam. Now, forging forms the fundamental shape and the part is finished by machining the shaft and the back face of the spur gear.

So far, the largest production has been in bevel gears, both straight and spiral. The gears range from small pinions about 1 in. in diameter to hypoid ring gears up to 8 in. in diameter. The best properties have been in gears having a pitch less than 12 since a greater amount of metalworking is necessary to forge these gears.



At the top are the two sections of the testing die. The three samples below show surface elongation of 12, 11, and 10 per cent. Cracking is located by arrows

Die Tests Elongation

Difficulty in working high-strength aircraft and missile metals has led to the development of a surface elongation device that accurately predicts forming limits

MEASUREMENT of surface elongation has been reduced to counting the unbroken corner beads in a metal sample.

A testing device consisting of a set of V-shaped dies is used. One is dimpled to various depths. Pins in the other press the sample into the dimples.

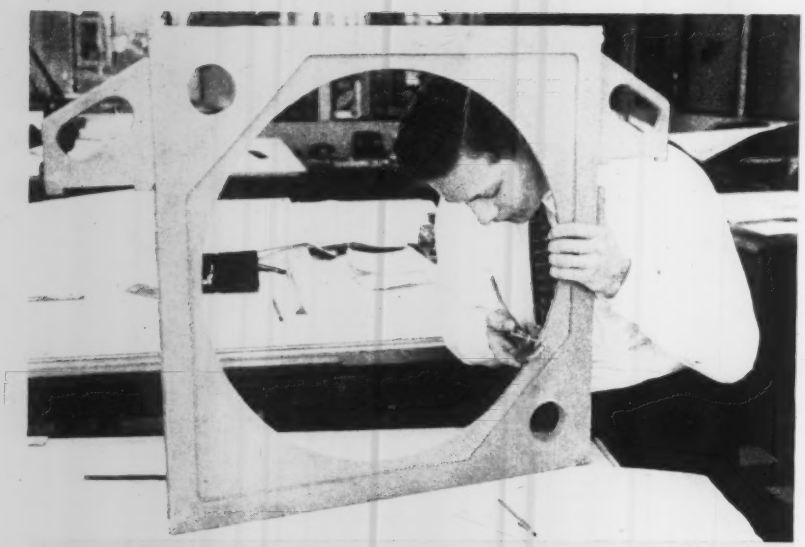
Progressing from shallowest to deepest, each bead requires more elongation. This difference is controlled, and it requires 1 per cent less elongation for forming without fracture than the next deeper one.

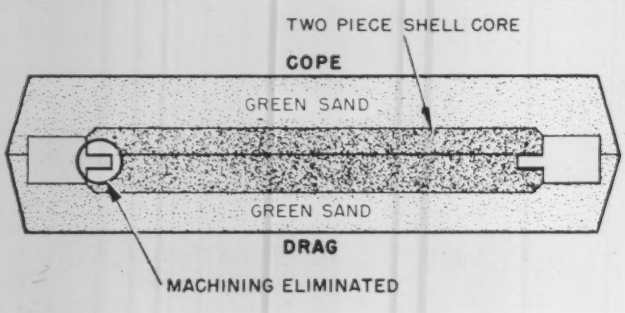
Two Sets Required—To cover all production sheet thicknesses, two pairs of dies are required—one for testing 0.010 to 0.040 in. and the other for 0.050 to 0.1 in. Different tempers have no effect, as long as the piece is within the capacity of the press being used. The dies have been used successfully in a Guerin-type hydraulic press at maximum speed.

Test pieces do not have to be machined to close tolerances nor is special edge preparation required.

Aluminum, titanium, and magnesium were used in development. Alloys checked included aluminum 2024-0, 5052-0, 6062-0, 7075-0, and 7075-T6; magnesium FS 1-0; and titanium 4908 and 4901 (these being in annealed condition). The alloys were tested in raw stock finish.

Preliminary tests showed that limits for forming titanium without rupture could be accurately predicted from results. Chance Vought Aircraft Inc., Dallas, has applied for a patent on the device and plans licensing arrangements.





Drawing shows how shell cores and green sand are combined to cut casting and machining cost on a filter press plate. In the photo, an engineer is measuring the flange which the shell core holds to plus or minus 0.015 in.

Shell Cores Save Machining

Resin binders for molding materials give castings a smoother, more accurate surface. Firms realize savings even when the method is combined with standard green sand technique

SHELL casting methods can cut production costs for makers of stainless products, says Foundry Products Div., Cooper Alloy Corp., Hillside, N. J.

The firm points out that a bonded sand shell (as either full mold or core) is superior to one of green sand. Close tolerances can be held on critical surfaces, minimizing machining.

Examples — Tennessee Eastman Co., a division of Eastman Kodak Co., Kingsport, Tenn., uses a shell core in producing a filter press plate. The casting is 18-8 stainless, about 2 ft square. Cast in green sand, the inner web could be held only to within 1/32 in. A later milling operation reduced that to 0.015 in.

To get rid of milling, the foundry developed a two-part shell core. Placed in a sand mold, it formed a smooth web holding the surfaces symmetrically about a center line. The company figured it saved several dollars per unit.

Another Case—Dorr-Oliver Inc., Stamford, Conn., makes a rake classifier which separates metal or ore particles in a liquid slurry. The rakes pull out large particles while the smaller ones flow over the end.

Old style rake blades were flat. Fastening them to overhead supports required a pair of brackets. Assembly required five operations.

Redesigned blades incorporate the brackets. At first, slots and bolt holes were rough cast, then machined. But shell cores eliminated that operation.

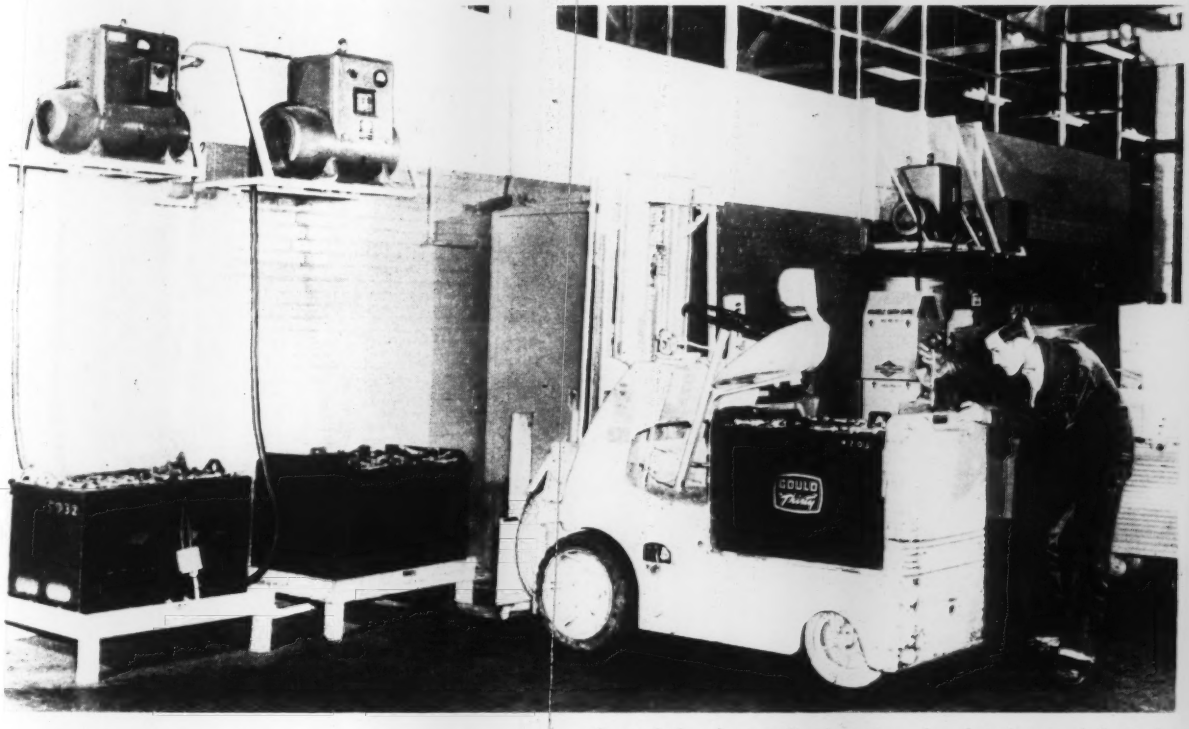
Each rake blade is cast with two cores. They hold tolerances to 0.010 in. and perform three functions in critical areas: 1. A smooth surface is provided inside the brackets. 2. The end surface forms a slot for the stringer. 3. A pair of cylindrical projections for the top surface become bolt holes. Since outer blade areas are less critical, they are cast in green sand.

Result: A five-step assembly cut to two—drilling holes in the stringers (which hold the blades) and attaching the blades.

Saves Machining — Manning, Maxwell & Moore Inc., Stratford, Conn., casts the adjusting rings for its safety relief valves. To change the operating characteristics which control flow, ring position is important—the narrower the lugs, the more accurate the position.

With sand castings, each lug had to be machined. With shell casting, lug design eliminates machining. Also, they are narrower and more lugs can be used—a factor which increases fineness of adjustment. A sleeve below the lugs, formerly needed to aid machining, is no longer required.

Benefit: Five machining steps eliminated.



One of the decentralized stations for charging truck batteries

Idea for Battery Charging

Decentralized stations were set up at several locations in this 10-acre plant to eliminate excessive traveling. Trucks and batteries are assigned to departments

EFFICIENT fleet operation, low cost handling, and virtually no downtime are the advantages of decentralized battery charging (for electric trucks), says Briggs & Stratton Co., Wauwatosa, Wis.

The company uses a fleet of 36 battery-powered trucks to keep raw materials, parts, and finished products moving through the 10-acre plant. (One cylinder, 4 cycle engines are made there.)

Location of Units—Stations for charging the batteries are at six key points to keep operator travel to a minimum. Shipping and assembly areas have the largest operation. Motor-generator units are placed on an elevated shelf, leaving room for spare batteries below.

Equipment consists of a large, four-circuit motor-generator set and four smaller units. The four-circuit apparatus charges the 16 cell, 32 volt Gould-National batteries (capacity, 540 ampere hours) for lift trucks. Smaller chargers handle the 12 cell, 24 volt batteries (capacity, 600 ampere hours) which power the smaller dock trucks.

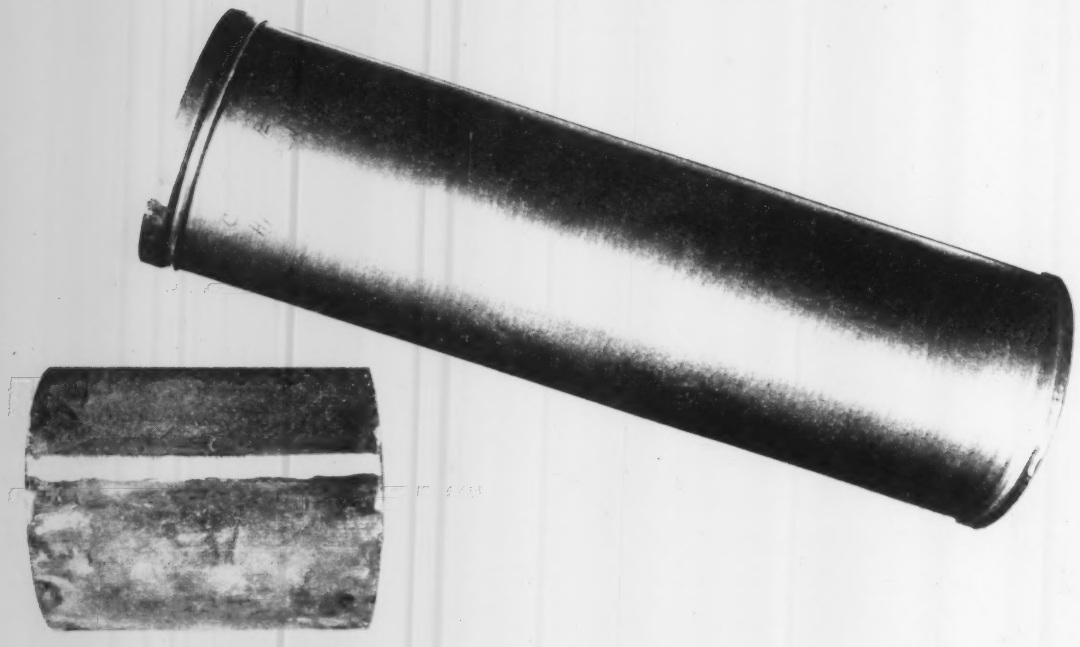
Procedure—Charging is automatically controlled to assure proper operation. The batteries are revitalized every day with modified constant potential charging.

Each truck has two batteries. Each battery is given an equalizing treatment every five days.

Normally, batteries are left in the trucks. When it is necessary to remove them for periodic washing, equalizing charging, or special maintenance, the trucks are taken to the receiving dock where an overhead hoist is available.

Plant Economics — Each truck and its batteries are assigned to a production department (such as diecasting). It is dispatched by the production executive of the department.

Operators are responsible for a specific unit and its accessories. Each battery is numbered and is used only in its assigned truck. All battery charging and maintenance are under the supervision of the electrical foreman.



In a fabricability test, ¼-in. sheet of U. S. Steel Corp.'s new Airsteel X-200 was shaped into a welded cylinder and hydrospun into a cylinder with 0.080-in. walls

Superstrength Steel Hardens in Air

New alloy develops tensile strength of 280,000 psi by cooling in air and tempering. It can be formed in soft condition and welded by metallic or inert arc

AIRSTEEL X-200, a new ultrahigh strength sheet steel alloy, may solve some welding and fabricating problems for makers of missiles and rockets.

Developed by U. S. Steel Corp.'s research center at Monroeville, Pa., the alloy is air hardenable. When cooled in air and tempered, it develops tensile strengths of about 280,000 psi.

Eliminates Headaches—Most alloy steels require oil or salt bath quenching to develop equivalent strengths. Large quenching tanks must be built to accommodate missile parts. In some cases, strength levels in a part may vary because of uneven quenching action and cause distortion. Straightening becomes necessary.

The new steel gets its high strength from alloying elements which have proved suitable for rendering steel air hardenable. It means that a fabricated missile part can be hardened by cooling in the open air of a shop after heating.

The sheet is produced in the annealed condition which allows easy forming, cutting, or shaping to the required configuration.

Fabricability Tested—The corporation's Consolidated Western Steel Div. in Los Angeles has conducted exhaustive fabricability tests on Airsteel X-200. They included forming, fitting up for welding, heat treating, and hydrospinning. Various types of missile motor cases with and without longitudinal welds were made.

The weldability study showed that the welded joint was equal to the strength level of the steel itself. Both metallic arc and inert arc-welding were evaluated. Results of the tests showed that the material is suitable for missile applications, including large diameter, thin wall motor cases.

Birth of A 20 Ton Sailor

Looks like any other *seventy-two* inch steel ingot —but is it? Trained down to fighting weight, it is a *twenty* ton sailor aboard an oil tanker . . . a ship's shaft to turn propellers against the heavy seas of the North Atlantic. Its "trainers" . . . experts in forging, heat treating, machining . . . men of long experience in quality control carefully check every step of the way to make sure it holds its "rating" in the ship's company. Steel forgings and castings for naval and maritime fleets are completed here from raw materials to shipping dock . . . have been for over three quarters of a century. Another of the many important reasons you can consult with us on *your* Steel Forging and *your* Steel Casting Components with full confidence.

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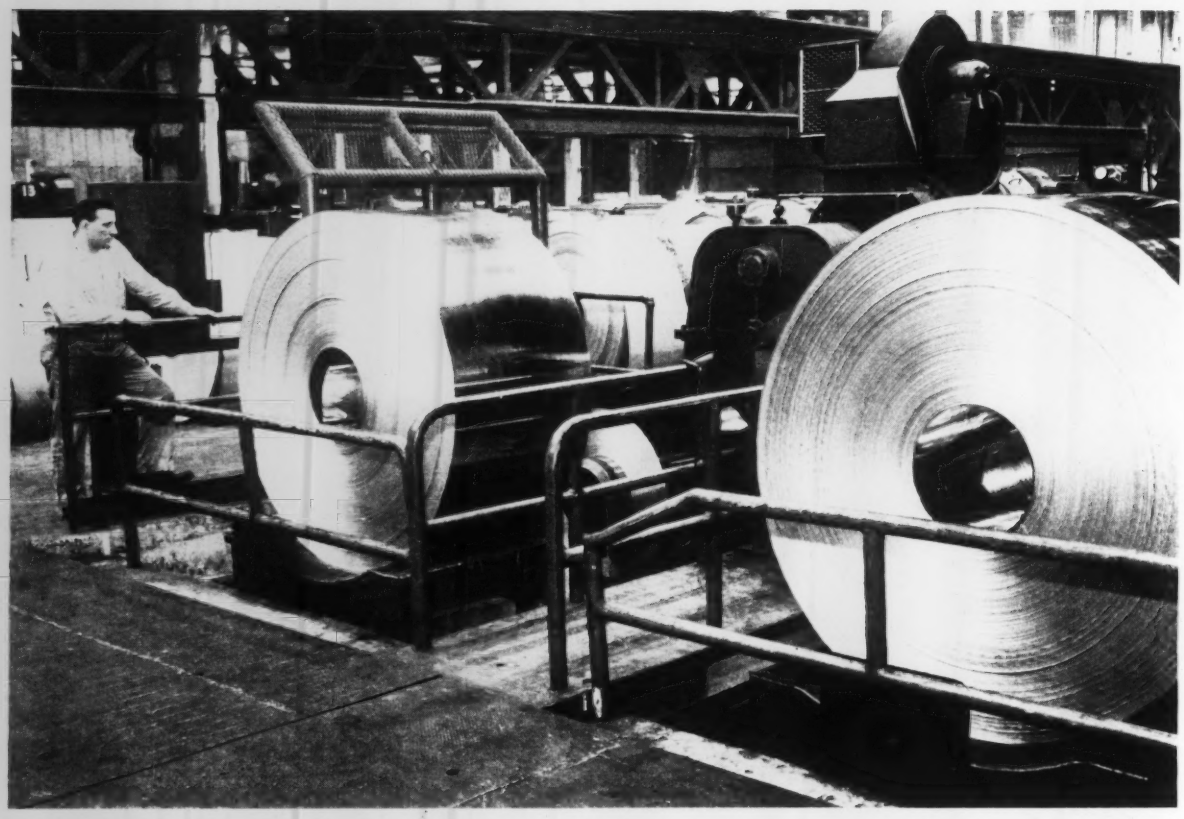


Tin plate ready to be shipped to the canmaker . . .

What's Inside the Coil?

A vital question asked by mill and customer alike is being answered by automatic data accumulation. It presages automatic quality control of coiled products

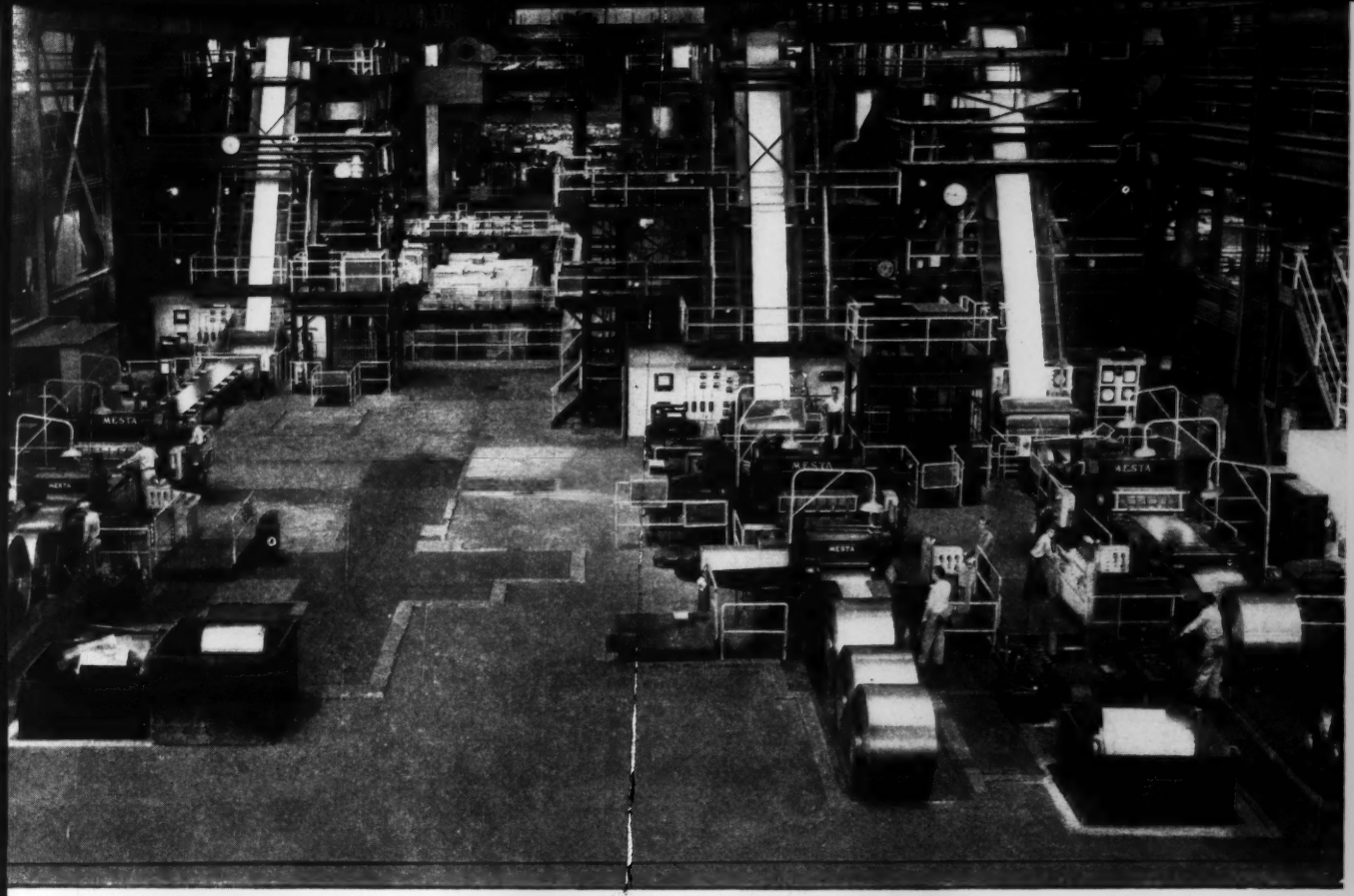
By R. RAYMOND DAVISSON
Applications Specialist
Computer Dept.
General Electric Co.
Phoenix, Ariz.

CAN MANUFACTURERS have discovered that they can make significant savings in raw material costs by purchasing tin plate in coils. The impact of this discovery is being felt by tin mills. Five years from now 50 to 80 per cent of their shipments will be in coil form.

The change in purchasing procedure makes it possible for the tin plate manufacturer to ship his product directly from the end of the tinning line. It has also spurred interest in automatic data accumulation, now that hand inspection of cut sheets is being dispensed with in the mill. Both the mill and customer want a running record of what is inside the coils.

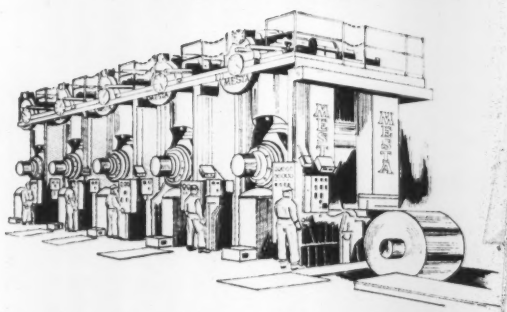
Inspection by Machine—When tin plate is shipped as a coil, including the defective material, it is possible to realize the full productive potential of the electrolytic tinning line. It is necessary to record inspection data as fast as the product is produced. Since an operator cannot keep up with the process, the recording has to be done by an automatic data accumulation system.

Basically, every data accumulation system can be represented by a diagram (see Fig. 1). As the tin plate



THREE MESTA 48" CONTINUOUS GALVANIZING LINES WITH FEED REELS, AUTOMATIC MASH WELDERS, TENSION REELS, AND ROTARY FLYING SHEARS WITH LEVELLERS.

Continuous galvanizing lines



Designed and Built by MESTA

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

Fig. 1.—Basic components of a data gathering system

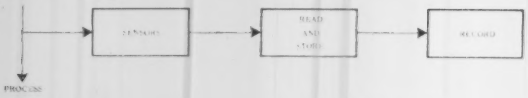


Fig. 2—Automatic data accumulation system for a typical tinning line

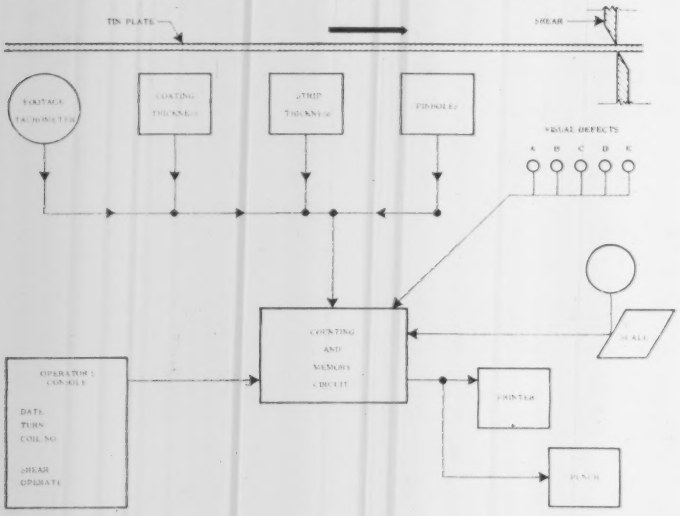
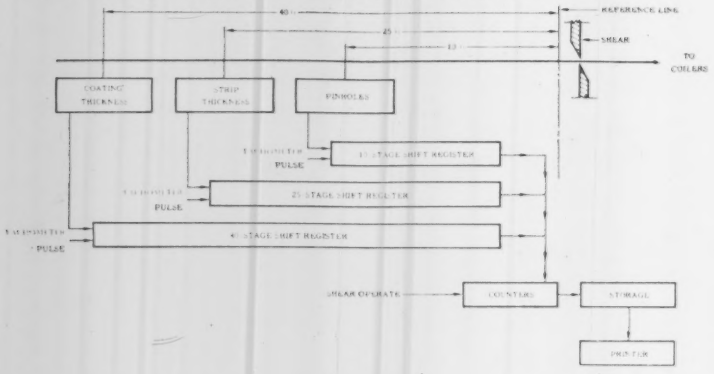


Fig. 3.—How shift registers operate in a typical data system



emerges from the electrolytic tinning process, and before it reaches the coilers, it passes a visual inspection station and a number of automatic detectors (sensors). Sensors detect defects which have occurred during the process. The system counts or tallies the output of the sensors and records the results. It does not affect the operation of the tinning line.

How the System "Sees" — The sensor may be a load cell, a thermocouple, or a pinhole detector, for example. Its output may be continuous (load cells or thermocouples), or it may be intermittent (pinhole detectors).

The accumulation system reads the output of the sensors, stores it, and records it. The recorded output may be in a number of forms: Tin plate data are generally printed on a log sheet and simultaneously punched into either paper tape or cards.

Data Recorded—A data accumulation system for a typical tinning line is diagrammed in Fig. 2. This system produces a record showing: 1. Total feet of strip having light top coating, light bottom coating, pinholes, offgage, and other defects. 2. Total feet of prime, menders, and waste. 3. Coil number. 4. Coil weight. 5. Order number. 6. Date and turn.

Memory Needed—Since the information is collected before the strip runs onto the coiler, a memory of some sort is required to associate the data with the right location and the right coil. The memory base is the distance between the sensor and some reference point in the tinning line. This distance is divided into 1 ft increments, or stages.

The size of the memory is related to the number of sensors in the line and the distance between the sensors and the reference point. The greater the distance, the "longer" the memory; the more sensors, the more "tracks" there are in the memory.

A "track" or "shift register" in the memory may be regarded as a string of stages. If the distance from the shear, for example, is 200 ft, the memory track for that sensor must have 200 stages. Fig. 3 is a block diagram showing the shift registers for a typical system.

Locations Pinned Down — A tachometer registers one pulse per foot of strip passing it, regardless of the speed of the strip. Its output is used both to count the number of feet of strip in a coil and to synchronize the operation of the data accumulation system with the tinning line.

As the strip moves toward the coilers, each sensor is scanned or "read out" once for every foot of strip which passes it, and the reading is entered in the first stage of the shift register. The synchronizing pulse from the tachometer now causes all the information in the memory to be moved over one stage, leaving the first stage empty, ready to take the next information from the sensor.

Successive pulses from the tachometer cause the information to move from stage to stage down the shift register. The information shifts through the memory in synchronism with the movement of the strip, and as the tin plate is taken up on the coiler, the information is read out of the memory into counters, which tally all the information.

Data Are Printed—When a shear operates, ending the coil, the coun-

Is direct labor a high percentage of production cost?

Would an increased production rate lower cost?

Is machine "idle time" for part loading and unloading high?

Does operator fatigue influence product quality?

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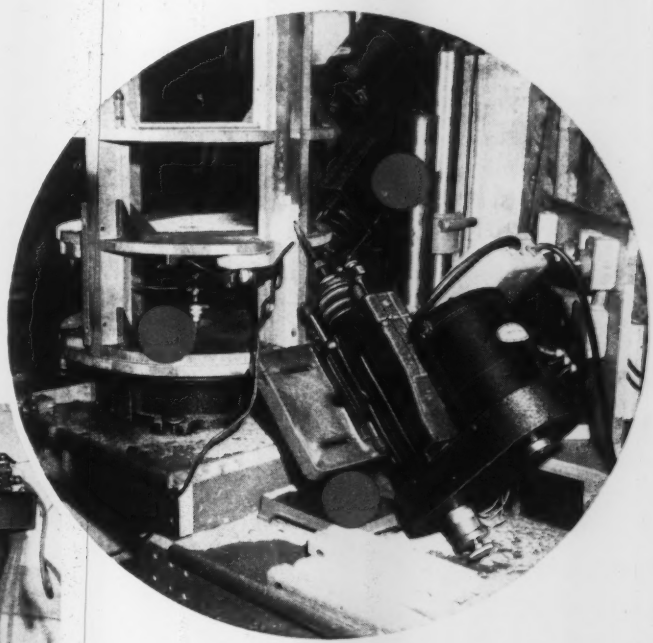
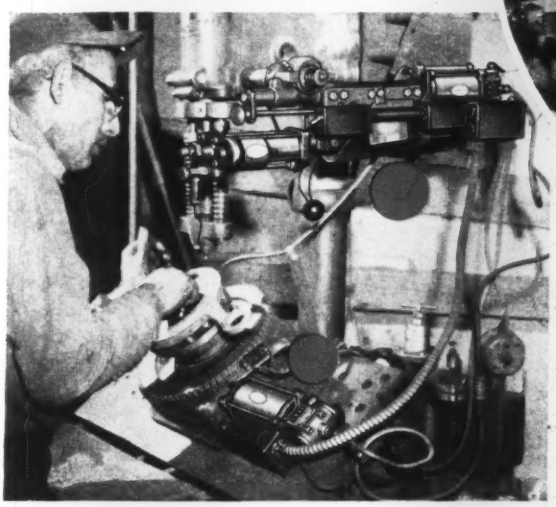
Schematic layouts, wiring diagrams, photos showing simple ways to automate standard machines. Free on request. Write Dept. ST-958, The Bellows Co., Akron 9, Ohio. In Canada: Bellows Pneumatic Devices of Canada, Ltd., Toronto 18.





The Bellows Co.

DIVISION OF INTERNATIONAL BASIC ECONOMY CORPORATION

AKRON 9, OHIO

1195-B

ters immediately "dump" into a storage section which feeds the output printer. All the counters must be cleared at the end of a coil, so that they can begin counting the information relating to the next coil.

The output printer is an electric typewriter which, in addition to printing the counter outputs, punches a paper tape. The tape can then be translated into magnetic tape or punched cards for use in billing, or by production or quality control people as raw statistical data.

The last item printed is the weight of the coil. While the printer is working, the coil of tin plate is removed from the coiler, marked with its coil number, and placed on a scale. The weight of the coil is read out directly to the printer either by automatic means, or by operator-controlled pushbuttons. Interlocks insure that the weight of one coil is read before the printer can begin to print out the data for the next coil.

Checks and Controls—A built-in circuit can be used to keep constant check on system performance. If an error occurs, a warning light on the operator's console goes on, and the erroneous data are printed out in red. Failures in the system will not cause the line to stop, since the data accumulator is not a control system, although that additional step may be developed.

Data accumulation systems of this general nature may be applied to nearly any continuous operation in metal rolling and processing. For example, a similar system could be used to record many of the quantities measured on a hot-strip mill, such as strip temperature, strip thickness, and roll pressure. The systems undoubtedly are the forerunners of the automatic production control which will produce more steel of more uniform quality at less cost.

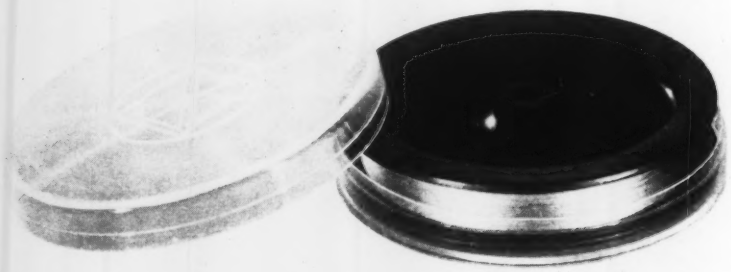
Zinc Protects Blowers

A new application for hot dipped, zinc coated steel sheets that will result in longer-lasting air blowers has been developed by Morrison Products Inc., Cleveland.

The company makes squirrel-cage type blowers for residential heating and cooling units. It has replaced the cold-rolled sheets used in making 36 different models with zinc-coated sheets. Biggest benefit is increased corrosion resistance.

Selling Price Is Same—Customers get the advantages of the new material at no extra cost. The higher cost of zinc-coated sheets is offset by the elimination of cleaning, painting, and drying required for blowers made of cold-rolled sheets.

Wheel rim diameters of the blowers range from 9 to 20 in. Blade lengths run from 6 through 20 in. Zinc-coated sheets 0.0299 to 0.0598 in. thick are used in fabricating the wheel blades, rims, and housing wrappers. Despite extensive welding, the finish on the blower is free of discoloration or burn marks.



Transparent container for thermocouple wire also protects the product

Package Aids Identification

Composition of thermocouple wire is quickly determined by color of its spool. Case keeps out dirt and grease that might change calibration of the wire

A PREMIUM product for premium operation in a premium package: That's the way J. Bishop & Co., Malvern, Pa., describes its platinum thermocouple wire.

Like other firms, Bishop is continually looking for new ways to improve the quality and utility of its product. In this case, greater utility was the aim. The way it was done: New color coded plastic spools and a new transparent case.

For Easier Handling — Bishop makes three kinds of thermocouple wire: Platinum, platinum with 10 per cent rhodium, and platinum with 13 per cent rhodium. In the new color system, black represents pure platinum wire; maroon is for the 10 per cent rhodium product; and green tells the worker he has 13 per cent rhodium wire.

Chief duty of the case is to keep the wire free of dirt and grease that can change its calibration. The worker can stick it in his pocket and take it to the thermocouple he wants to replace. The case isn't opened until the wire is ready to be used.

An added bonus for users of the wire: Instructions on the care of the noble metal are included with the case.

sure it's big

. . . but not particularly big or unusual in Carlson's production of stainless steel plate

IT was normal, but not easy, for Carlson specialists to handle this big plate. Type 304-L stainless, it measured $\frac{7}{16}$" x 131$\frac{1}{2}$" x 452$\frac{9}{16}$" and weighed an impressive 7923 pounds. And when this big one landed at the customer's receiving dock it was *exactly* what he wanted . . . *right* by chemical composition, *right* by physical standards, *right* to specification and *right* to size.

Whatever you need in stainless steel—big plates, small rings, formed or cut-to-shape items—will be produced accurately and on time. Stainless steel is our *only* business, and we know it. That is why you can depend on Carlson to give you *what you want when you want it!* Your inquiry is invited.

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How GM Lists Machine Tools

Complete records help divisions get needed equipment from within the corporation. Buying policy also gives the inside track to used GM machines. Here's how it works

MACHINE tool builders are taking a long look at the trend in the automotive industry to re-use capital equipment, rather than buy new. The trend (not new) may necessitate some marketing and building changes, particularly in the special machine tool industry (see STEEL, Aug. 18, p. 45).

How will automakers, with multiple plants, know what machine in what plant is available for a specific job? Here's how it's done at General Motors Corp.

Inventory — The "Uniform Machine Tool Classification" at GM lists some 176,000 GM-owned machine tools (they also include such things as heat treat furnaces and diecasting machines) plus about 12,000 government-owned machines in GM plants.

Each machine has its record card that tells the manufacturer's name, where the machine is, what type it is, who owns it, whether the machine is in use or idle, when it was bought, and how much it cost. All of these cards are on file in the corporation's production engineering section, Process Development Staff.

Application — The records serve three purposes. First, a GM division that needs equipment in a hurry can go to the files and learn where the equipment is within GM. This paid off handsomely after the Livonia fire.

Also, in case of a national emergency, when the government steps in to initiate war production, the relocation and adaptation of the equipment for new production would be much simpler than if no comprehensive files existed.

Finally, the equipment inventory gives an assist to the record keeping that's done for tax and depreciation purposes.

The machine tool classification and records greatly sharpen the corporation's ability to utilize its equipment to the hilt. So does its purchasing procedure.

How GM Buys—There is no central authority for the purchase of any equipment. Each division manager has the authority to approve capital equipment purchases up to a specified expenditure limit. Group executives can authorize more expensive (but still limited) purchases; the corporation president can authorize more expensive purchases, but he, too, has a ceiling. Above this range (where many transfer lines would come) proposed purchases must be submitted to an administrative policy committee for approval.

When purchase has been approved, the requesting division sends a letter of need to the production engineering section. Based on the letter, the production engineering section sends an acquisition letter (outlining equipment wanted and who needs it) to the machinery contact man in each of GM's divisions.

Divisions having the equipment idle contact the requesting division and make their own shipping and transfer arrangements. The details of the transfer are sent to the production engineering section and put on the machine tool classification record.

If the requesting division gets no response, it sends purchase requests to outside sources. Those requests are handled by individual divisions —no central office is involved.

Disposal of equipment works in a similar way. Lists of equipment to be disposed of are circulated. Division managers may select from it and contact the original division.

Adds Bigger Pits

Lukens nears completion of an expansion program that greatly increases platemaking capacity

NINE GIANT soaking pits, installed to heat record-size ingots weighing up to 75 tons each, were recently put into operation at Lukens Steel Co., Coatesville, Pa.

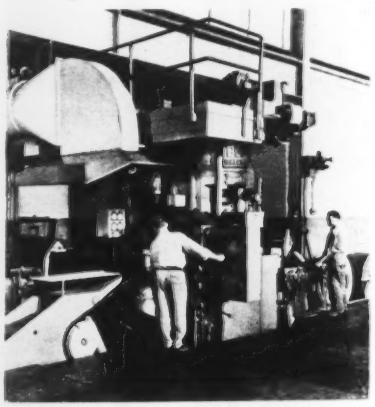
They are part of the largest expansion program in the company's 148-year history. Each is capable of holding up to 200 tons of ingots.

Crane Big, Too — The stiff-leg crane which lowers ingots into the pits and lifts them out after heating is also among the largest of its kind. Like the pits, the crane handles ingots weighing up to 75 tons each.

The first ingot to be heated on a production basis required Lukens' largest ingot mold. (It's 108 in. wide, 40 in. thick, weighs 66 tons.)

The ingot was rolled into three plates (8½ in. thick) on Lukens' 206-in. mill.

Modernization—The new equipment gives Lukens outstanding facilities for producing steel plates. Other major items in the $33-million program, to be completed by the spring of 1959, include a new electric furnace which will raise Lukens' annual ingot capacity by some 25 per cent (to 930,000 tons), and a new 140-in. rolling mill which will raise the company's rolling capacity by some 40 per cent.



ONE-WAY, BLISS COLD MILL is saving money at the Sparrows Point (Md.) plant of Thompson Wire Co. It requires fewer passes than a reversing mill. Thompson converts a wide range of carbon and specialty steels, including saw blade steel, in widths to 20 in.

Their aim . . . to give you MORE than a motor

Tackling the Future—a job for Century's Junior Board

Carefully selected middle management men hold free-thinking, no-holds-barred discussions on Century Electric problems. Once a month, junior executives from production, design, finance, purchasing and sales get together to help build more benefits into the Century motor line. These benefits mean that when you do business with Century Electric, you get *more* than a motor.

The Junior Board was organized to insure the continuity of new design and manufacturing ideas that have been the hallmark of Century Electric progress for over 50 years. The results are new, better and improved customer services, products, production methods and design.

These are tangible benefits that Century Electric customers have learned to expect. In motor needs covering 1/20 hp to 400 hp, they know they'll get *more* than a motor from Century Electric. For more information, contact your local Century Electric Sales Office or Authorized Distributor.

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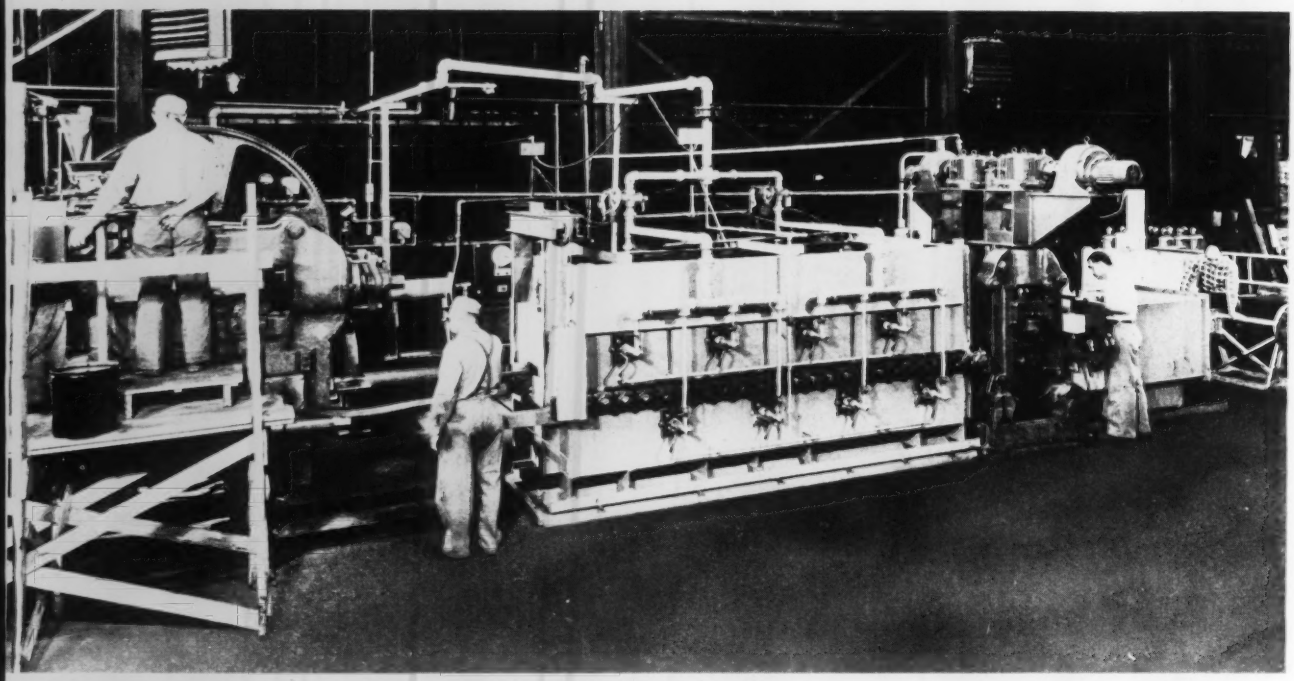


Copper strip is made from powder on this pilot line

Copper Strip Process Saves 80%

Ohio firm says powdered metal method is now ready for commercial production. High quality problems have been licked. Product has 100 per cent density, uniform edges

A NEW PROCESS for making hot-rolled copper strip from powdered metals beats the cost of doing the job with conventional equipment and rolling by 80 per cent, says E. W. Bliss Co., Canton, Ohio. Compared with electrolytic grade strip, it is said to have higher mechanical properties and a lower oxygen content.

Six years were invested in developing equipment designed for commercial production. Licensor of the process is Chemicals Corp., New York. Bliss is doing pilot studies at its Rolling Mill Div., Salem, Ohio.

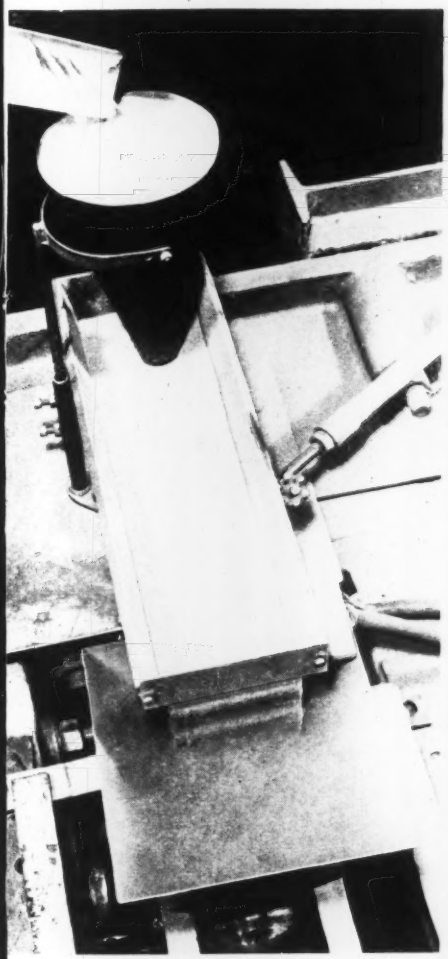
Details of Process—Metal powder from several sources, including scrap, ores, and concentrates, is prepared chemically. It is fed through a hopper and guide arrangement into a mill where it is green compacted. Special rolls and devices make a compact that has uniform thickness and density, with edges that are straight, sound, square.

The material is sintered as it passes continuously through a protective atmosphere heating furnace. After it leaves the furnace, the strip is immediately hot rolled for further reduction. Then, depending on the material, it may be sintered and hot rolled again to produce 100 per cent density.

Experimental copper coils made on the pilot lines are 0.040 in. thick, 6 in. wide, and weigh 100 to 200 lb. They are annealed and cold rolled to 0.010 in. on a conventional, 4-high rolling mill without difficulties such as edge cracks. The strip is finished by annealing. Exclusion of air assures a clean, bright product.

What Tests Showed — Experiments by Bliss, an independent testing laboratory, and a major producer of copper products gave similar results. Tensile strength of the powdered metal coil averages over 40,000 psi, nearly 5000 psi higher than the conventional electrolytic material. Elongation properties are nearly the same.

The hydrogen weight loss meth-

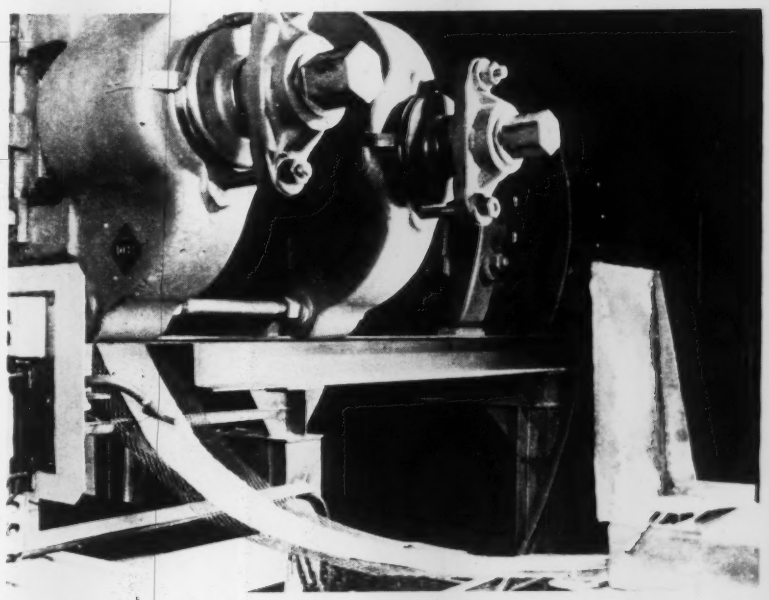


LOOSE POWDER is fed into a hopper and guide apparatus at the beginning of the process

od of determining oxygen content shows: The average for electrolytic is 0.04 per cent, vs. 0.02 per cent for the powder metal product. The vacuum fusion test for measuring oxygen level also shows that the content of the powder metal product is substantially below that of the electrolytic.

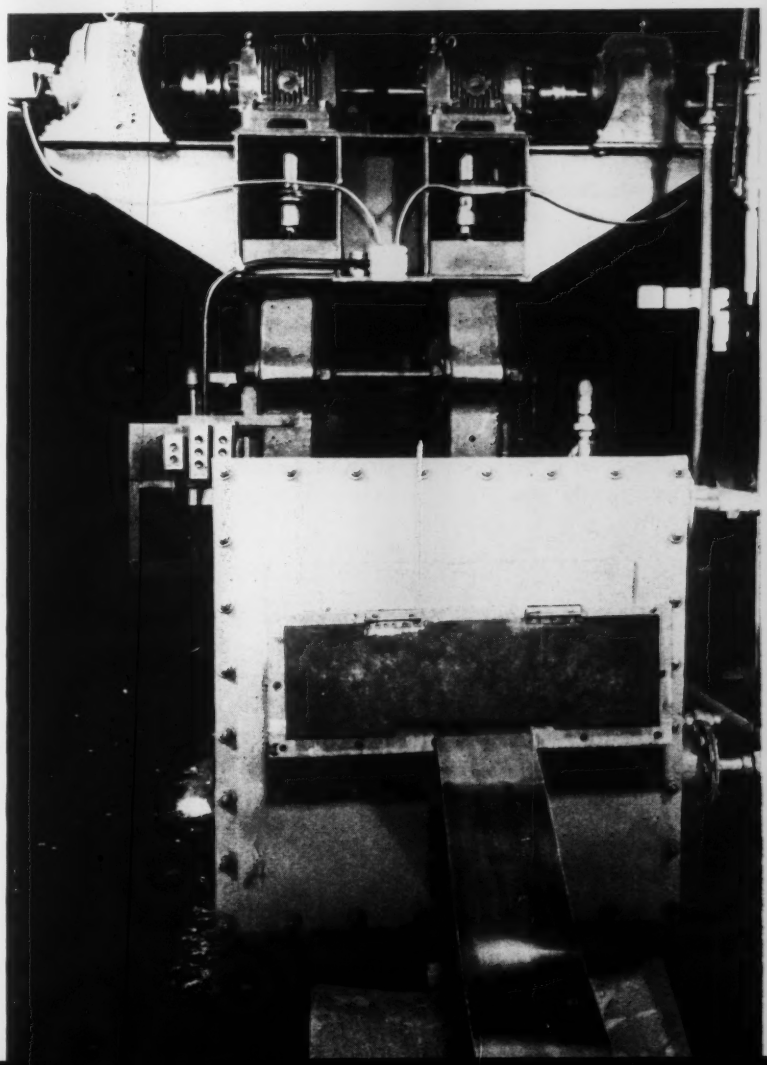
Future—Most of the development work involved copper, but practical applications extend to many other metals. Experiments with nickel show some promise.

Several producers in the nonferrous industry are working closely with Bliss to develop processes to suit their needs. George Perrault Jr., vice president, Rolling Mill Div., says the company is ready to make complete "turn-key" installations of the equipment.



COMPACTED POWDER makes a strip with uniform density and sound edges

FINISHED STRIP leaves furnace after being sintered in a protective atmosphere

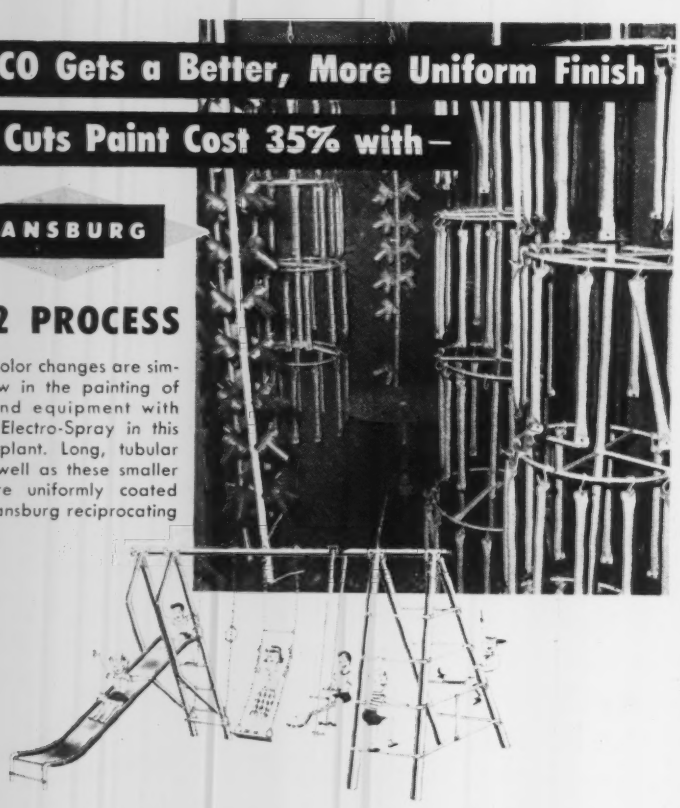


TURCO Gets a Better, More Uniform Finish And Cuts Paint Cost 35% with—

RANSBURG

NO. 2 PROCESS

Frequent color changes are simplified now in the painting of playground equipment with Ransburg Electro-Spray in this St. Louis plant. Long, tubular parts, as well as these smaller pieces, are uniformly coated with the Ransburg reciprocating disk.



QUALITY IMPROVEMENT! That was Turco Manufacturing's chief reason for changing from flo-coat to electrostatic spray painting of their quality line of playground equipment.

Not only is Ransburg No. 2 Process providing a higher quality, uniform coating on all parts, but Turco is saving 35% in paint cost!

Simplicity in color change with Electro-Spray is another important advantage here. With Turco's production methods, colors are changed 15 times in an 8-hour shift. Now, changes are made on the fly with no down-time. By contrast, the former "stop and go" method would mean over an hour's lost time in a day's operation.

NO REASON WHY YOU CAN'T DO IT TOO!

Whatever your product, if it's painted, we'd like to tell you more about the worthwhile savings and benefits which can be yours with RANSBURG ELECTROSTATIC PAINTING PROCESSES. Write for our No. 2 Process brochure which cites many examples of electrostatic spray painting on a wide variety of products.

Call or write

RANSBURG
Electro-Coating Corp.
P.O. Box 7822, Indianapolis 23, Ind.

More Spiegeleisen

New Jersey Zinc Co. says its new electric arc furnace assures ample supply for future

EMPLOYING principles of its recently developed Sterling process, the New Jersey Zinc Co., New York, has designed an electric arc furnace for the recovery of manganese and iron from its ore deposits at Ogdensburg, N. J.

The furnace is the first phase of a research and engineering program which the company says will insure adequate supplies of spiegeleisen for the steel and foundry industries for many years to come.

Company metallurgists have built a prototype unit on which a comprehensive series of tests have been conducted over the past two years. The firm reports that the smelting technique meets all requirements of economical and efficient production of spiegeleisen.

No date has been given for the construction of commercial size furnaces.

Propose New Hopper Car

A standardized, open top hopper car (capacity, 70 tons), which promises substantial savings in construction costs and maintenance, may bring increased orders to the steel mills. It was jointly announced by Chesapeake & Ohio, Norfolk & Western, and Pennsylvania Railroads.

Each company is building one of the cars. They plan to study different shop practices.

The car will have standard dimensions for all components of the body, such as sheets and plates for the sides, ends, and slopes. Elimination of dimensional differences between the railroads will help steel mills hold costs down. It will not be necessary to make changes in mill schedules to fill orders for each company.

Each railroad will select its own specialties, such as trucks, doors, and door frames at the bottom of the hoppers. They will be designed so they may be mechanically interchangeable.

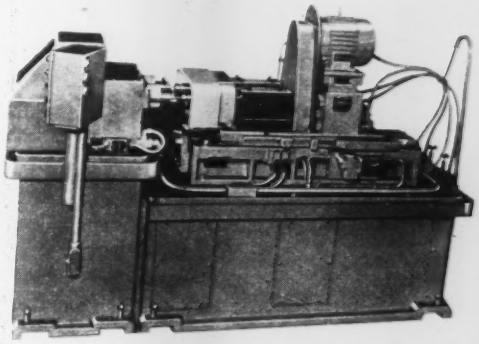
Deep Holes Made Precisely by Standard Gun Drilling Unit

This standard machine drills precision holes in a variety of materials, including stainless steel. With this unit, hole concentricity, squareness, finish, and size are held to critical tolerances.

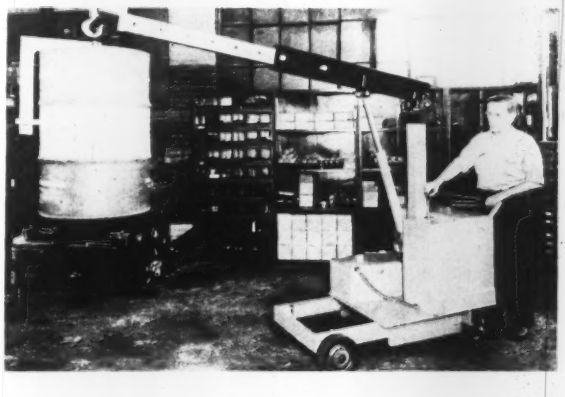
Except for load and unload, the operation is automatic.

The machine will handle two pieces simultaneously and will drill holes from 0.187 to 0.750 in. in diameter, 1 to 12 in. deep.

Spindle speed ranges from 2000 to 8000 rpm. Filtered cutting oil, which serves as a coolant and chip flusher, is supplied at 75 to 1500 psi at the tip of the drill. *Write*: Crescent Tool & Machine Co. Inc., 25125 W. Outer Dr., Melvindale, Mich. *Phone*: Dunkirk 2-5300



Mobile Crane Has Long Adjustable Boom



The Aero-Crane, a counterbalanced, mobile floor crane, has an adjustable boom with a hook reaching 48 in. beyond the front of the truck.

It eliminates straddling or placing of the front wheels under the load. The space above the boom need not be clear, and the load does not need a pallet as with overhead cranes and fork lifts.

This Series 400 unit has a 10-ft high reach and lowers to 1½ ft from the floor. Several models are available, ranging in capacity from 1000 to 3000 lb at 48-in. extension. All are available with fork attachment and 72-in. boom. The booms are powered by hand or battery. *Write*: Vanguard Engineering Co., 1908 E. 66th St., Cleveland 3, Ohio. *Phone*: Henderson 2-0755

Truck Is Equipped with Clutch Guaranteed for a Year

A 6000-lb fork truck, Model G-60, has a 12-month unconditional guarantee on its clutch. This power-assisted clutch gives complete starting and inching control without the need for a fluid coupling or torque converter.

The clutch is mounted horizontally. The plate is readily accessible for changing in less than 10 minutes. Wear is less than conventional installations because it operates at less than one-half engine speed.

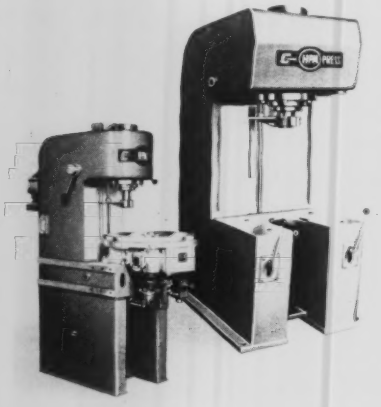
Power steering with low gearing and wide pneumatic tires eases handling on rough, soft, or other unfavorable working surfaces. *Write*: Mercury Mfg. Co., subsidiary of Pettibone Mulliken Corp., 4710 W. Division St., Chicago 51, Ill. *Phone*: Spaulding 2-9300

NEW PRODUCTS and equipment

Presses Have Fast Action

These fast acting, hydraulic, C-frame presses are made in 5, 10, and 15 ton capacities.

Manual models are offered for

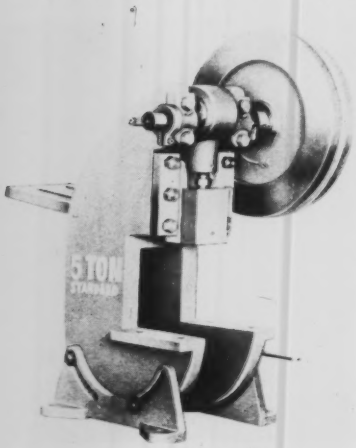


dual lever, safety control operation. Servocontrolled action permits the operator to apply ram force at speeds and pressures directly proportionate to the movement of the hand lever.

The basic automatic model provides controls for single or automatic cycle, and ram reversal to either distance or pressure settings. A second automatic possesses control elements for interlocking a 16-in. hydraulic index table. *Write*: Hydraulic Press Mfg. Co., division of Koehring Co., Mt. Gilead, Ohio.

Augments Present Presses

The Series 40, low cost, standard punch press will augment present Benchmaster models. It will supply



all necessary features plus many of the refinements of the expensive models.

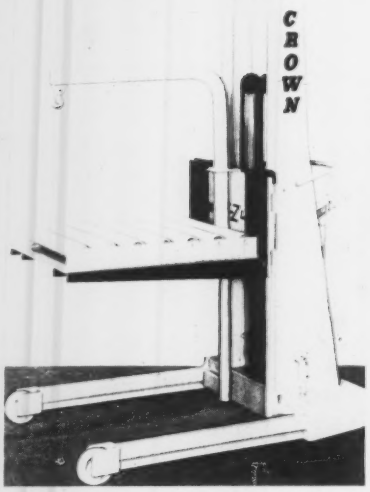
The press will fill most requirements of standard light manufacturing operations. Capacity is 5 tons. Standard stroke is 1 in.; stroke lengths up to 2 in. are available. *Write*: Benchmaster Mfg. Co., 1835 W. Rosecrans Ave., Gardena, Calif. *Phone*: Faculty 1-0411

Portable Lift Is Versatile

The manually operated L-642 portable lift has roller top table, smooth plate platform, adjustable forks, and a demountable boom for various applications.

When not in use, the attachments are stored on the frame. Changes can be made in seconds.

Lifting capacity is 2000 lb at a 15-in. load center on the roller top, smooth plate, and forks. The boom

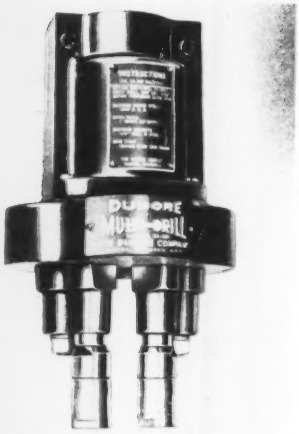


is rated at 500 lb capacity. Loads can be raised 60 in. *Write*: Crown Controls Co. Inc., New Bremen, Ohio.

Device Drills and Taps

This multiple spindle drilling and tapping attachment, called Multi-Drill, is for use with the Dumore Series 24, 26, and 28 automatic drill units. It is also available with 3 and 4 spindles.

Each spindle has a drilling capacity up to 1/4 in. in steel. Spindles rotate from a fixed point and can be adjusted to reach a 3 7/8-in. maximum bolt circle. The minimum cen-



ter distance is 7/8 in. *Write*: Dumore Co., 1300 17th St., Racine, Wis. *Phone*: Melrose 3-8221

Alloy Brazes Wide Gaps

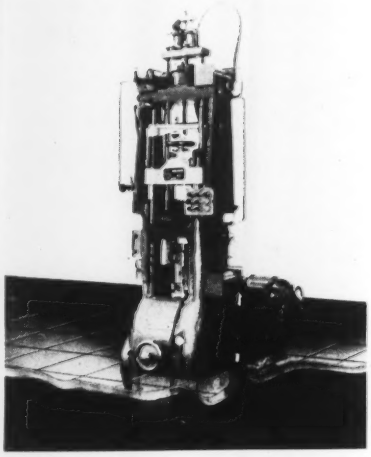
W. G. Nicrobraze brazing alloy is recommended for nonrotating lightly loaded parts and structural assemblies that have cross-sectional thicknesses of 1/16 in. or greater.

An excellent braze has been produced in gaps up to 0.050 in. in large fillets. Its wetting characteristics, good alloying effect, and high viscosity factor produce strong rigid joints.

This product is available as a powder or as impregnated plastic wire. *Write*: Stainless Processing Div., Wall Colmonoy Corp., 19345 John R St., Detroit 3, Mich. *Phone*: Twinbrook 3-3800

Press Redesigned

A Baldwin 75-ton compacting press provides high production speed



and quality, and eliminates powder loss.

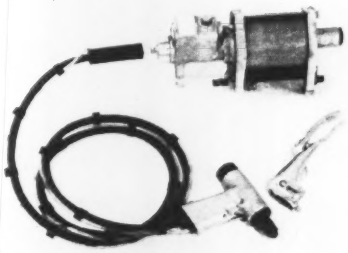
The Model 75-A compacts powdered metals, abrasives, carbides, cermets, ferrites, and nuclear and other solid fuels for rockets and missiles.

It is a completely redesigned version of the Model 20-A. *Write*: Hamilton Div., Baldwin - Lima - Hamilton Corp., Hamilton, Ohio. *Phone*: Twinbrook 4-6511

Riveting Tools Portable

Two lightweight riveting tools for assembly and product maintenance can be used for setting small rivets up to 3/16 in. in diameter in standard, overhead, or blind applications.

One, a hand tool slightly larger than household pliers, will set alu-



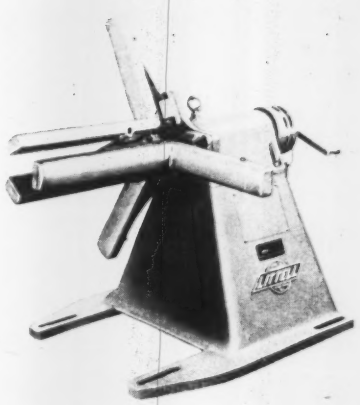
minum rivets 3/32, 1/8, or 5/32 in. in diameter, and Monel or steel types up to 1/8 in. The other tool is an air-hydraulic gun that weighs about 2 lb that will pull Monel rivets up to 3/16 in. *Write*: Pop Rivet Div., United Shoe Machinery Corp., West Medway, Mass.

Reel Centers Heavy Coil

Automatic centering, three-arm reels for coils of copper, bronze, brass, and tin plate stock accommodate up to 4000 lb. They handle coils 45 in. in diameter and 18 in. wide. The 8½ to 10½ in. diameter reels accommodate the smaller inside diameters of such coils.

Adjustable spindle drag prevents too rapid unwinding. Full braking is automatically applied when equipment to which coils are being fed is stopped.

The reels are plain or motor driven. *Write*: F. J. Littell Machine Co., 4101 N. Ravenswood



Ave., Chicago 13, Ill. *Phone*: Ravenswood 8-3322

Mix Maintains Furnace

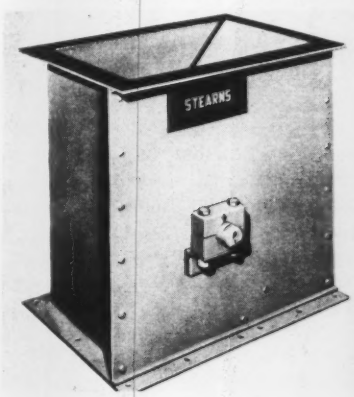
A basic refractory gunning mix, K/R 95, is a highly refractory Chrome-Periclase for use with the K/R gunning system. It can be used for hot or cold maintenance of back and front walls of open hearths and the sidewalls of electric arc furnaces.

It is applied above the slag line and in uptakes. It has excellent adherence to vertical walls. Because of its neutral characteristics, it is highly resistant to iron oxides and can be used safely on top of basic bricks or adjacent to acid bricks—particularly in skewback areas. *Write*: Kaiser Chemicals Div., Kaiser Aluminum & Chemical Corp., Kaiser Bldg., 1924 Broadway, Oakland 12, Calif. *Phone*: Twinoaks 3-4600

Separator for Tramp Iron

A high efficiency drum separator for tramp iron using permanent Indox V ceramic magnets is designed for installation in any enclosed chute or spout conveying system.

A revolving stainless steel cylinder

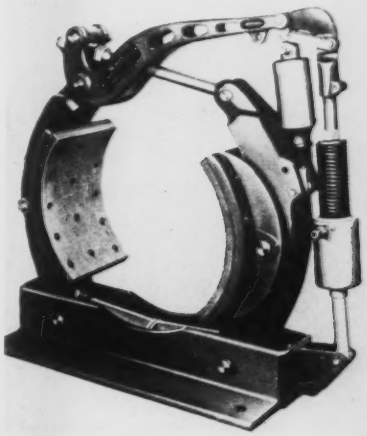


inside a welded steel housing carries material over the stationary magnet assembly. Tramp iron particles are picked up and rejected continuously and automatically—with no interruption of the material flow. *Write*: Stearns Magnetic Products, 635 S. 28th St., Milwaukee 46, Wis.

Brakes Easily Controlled

Two air-braking systems provide smooth power and dependable control for heavy industrial equipment.

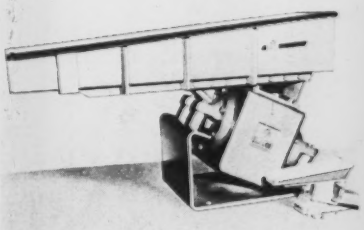
Either may be had with 14 x 6 in. or 18 x 8 in. external shoe type brakes. The first is for making service stops only, the second for



parking and holding operations as well as service stops. *Write*: Wagner Electric Corp., 6400 Plymouth Ave., St. Louis 14, Mo. *Phone*: Parkview 1-5000

Feeds Large Amounts

A large vibratory feeder, rated at 10 tons an hour, handles medium



to heavy feeding where accurate control is essential.

The V3B-50A Hi-Vi feeder incorporates an electromagnetic drive which requires no rectifier. It operates on alternating current.

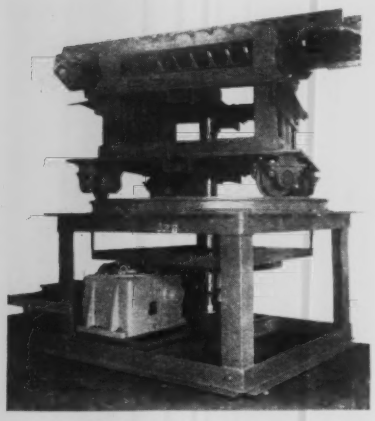
Compact design permits total enclosure of the electrical and drive

NEW PRODUCTS and equipment

elements as well as the spring system. Also illustrated is the smallest Hi-Vi feeder. *Write*: Eriez Mfg. Co., Erie 6, Pa. *Phone*: 4-0133

Table Rotates Coils

This heavy-duty turntable rotates coils (up to 30,000 lb) 90 degrees for right transfer to connecting conveyor lines. It can also be used for 180-degree rotation in position-



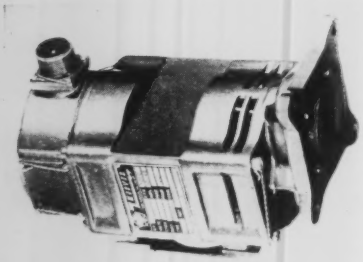
ing or orienting coil tails for discharge into processing machinery. *Write*: Logan Co., 200 Cabel St., Louisville 6, Ky. *Phone*: Juniper 7-1361

Motor for Special Uses

Aircraft, missiles, and ordnance are included in uses for this direct current 28-volt motor.

The Model D-820 delivers 2 hp at 3000 rpm, is of open frame construction, and features an integral cooling fan. Flame quench rings to make it explosion proof are available.

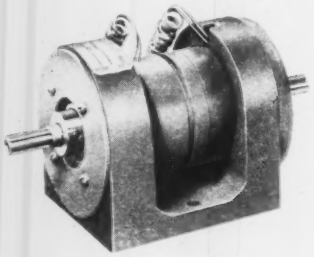
The mounting flange is a modified AND-20,001 configuration. *Write*: Hoover Electric Co., Hangar



No. 2, Port Columbus Airport, Columbus 19, Ohio. *Phone*: Belmont 5-9634

Unit Magnetically Set

These clutch-brake combinations are furnished as complete units



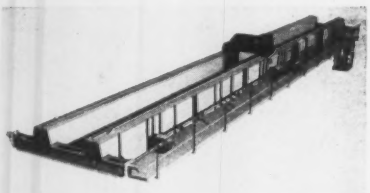
with bearings, shaft, and mounting stand.

The clutch and brake are magnetically set, including a neutral position. They can be furnished with a common armature splined to the driveshaft, or with a common hub with separate armatures.

Torque ranges are from 25 in.-oz to 175 in.-lb. Coils are set for direct current operation and can be wound for any voltage desired up to 90. *Write*: Stearns Electric Corp., 120 N. Broadway, Milwaukee 2, Wis. *Phone*: Broadway 2-1100.

Crane Parts Standardized

Standard component cranes for heavy-duty industrial use are available in spans up to 120 ft, have



capacities ranging from 5 through 25 tons, and are equipped for floor or cage operation.

Although these Shaw-Box SC cranes are custom built for exact requirements, all components are standardized and manufactured in quantities. Interchangeability of parts provides low cost, immediate availability of spare parts, and quick delivery. *Write*: Shaw-Box Crane & Hoist Div., Manning, Maxwell & Moore Inc., Muskegon, Mich. *Phone*: 3-1311

NEW literature

Write directly to the company for a copy

Bearings

Bulletin No. 466 describes a spherical roller bearing designed to absorb the heavy loads, high speeds, and eccentric motion of vibrating screens while meeting rigid lubrication requirements. SKF Industries Inc., Philadelphia 32, Pa.

Flexible Couplings

A brochure contains design and application data on the Amerigear Series GC continuous sleeve flexible couplings. Mechanical Power Transmission Div., Zurn Industries Inc., Erie, Pa.

Arbor Spacer

A brochure describes a micrometric adjustable arbor spacer that reduces setup time and eliminates trial-and-error methods. Cutters, collars, and spacers can be assembled to desired widths, plus or minus tenths, with infinite adjustment of the dial. O K Tool Co. Inc., 71 Elm St., Milford, N. H.

Transmission Belting

This folder describes adhesion transmission belting. Type COR is provided with outside cover of split chrome tanned leather, and Type CORCO has a Perlon woven fabric cover. Both have top grain leather pulley surfaces. Coriamid Inc., 41 Commercial St., Fitchburg, Mass.

Repeat Cycle Dial

Bulletin N-80 provides data on the miniature Atcotrol Duo-Set repeat cycle dial timer which controls two independently adjusted load circuits for on-off cyling. Dept. 202, Automatic Timing & Controls Inc., King of Prussia, Pa.

Plastic Steel Kit

A plastic steel emergency repair kit is covered in a bulletin. The material can be used for repairing tanks, pipes, pumps, valves, flanges, air ducts, and machinery. Devcon Corp., Danvers, Mass.

Forming Dies

Forming dies and other castings of Strenes metal for the automotive industry are featured in Bulletin No. 13. This metal is a chromium-molybdenum alloyed gray iron. Advance Foundry Co., 107 Seminary Ave., Dayton 3, Ohio.

Nameplates

A brochure describes the various types of nameplates, panels, dials, scales, signs, and Master-Cal foil manufactured by this firm. Items are etched and lithographed metal. Master Etching Corp., 50 Honeck St., Englewood, N. J.

Metalworking Tools

A catalog of metalworking tools covers lathe chucks, dividing heads, milling machine vises and magnetic chucks, drill press vises, demagnetizers, and rectifiers. L-W Chuck Co., 125 S. St. Clair St., Toledo 4, Ohio.

Stanscrew *standard* fastener does *special* job on free-wheeling hubs for "Jeep"

Attaching POWER-LOCK free-wheeling hubs to Willy's 4-wheel drive "Jeeps" calls for something pretty "special" in fasteners.

To begin, the fasteners must be tough and dependable . . . must have the ability to stand up under the punishment that is normal for an "off the road" vehicle. Since these hubs are sold separately, the fasteners also must present an appearance that builds consumer appeal. And they must be completely uniform to facilitate installation.

The Cutlas Tool and Manufacturing Company, Lyons, Ill., manufacturers of this Willys approved accessory, outlined the problem to a Stanscrew fastener specialist. He recommended Stanscrew's heat-treated cap screws with the extra toughness resulting from "Carbon Restoration" . . . cadmium plated for greater consumer appeal and higher corrosion resistance . . . and produced in an unusual length to precisely meet all the requirements for installation on Willy's "Jeep" vehicles.

Thus, by slightly modifying one of the more than 4,000 standard fasteners in Stanscrew's complete line, this specialist was able to supply a fastener which eliminated the necessity for a costly special.

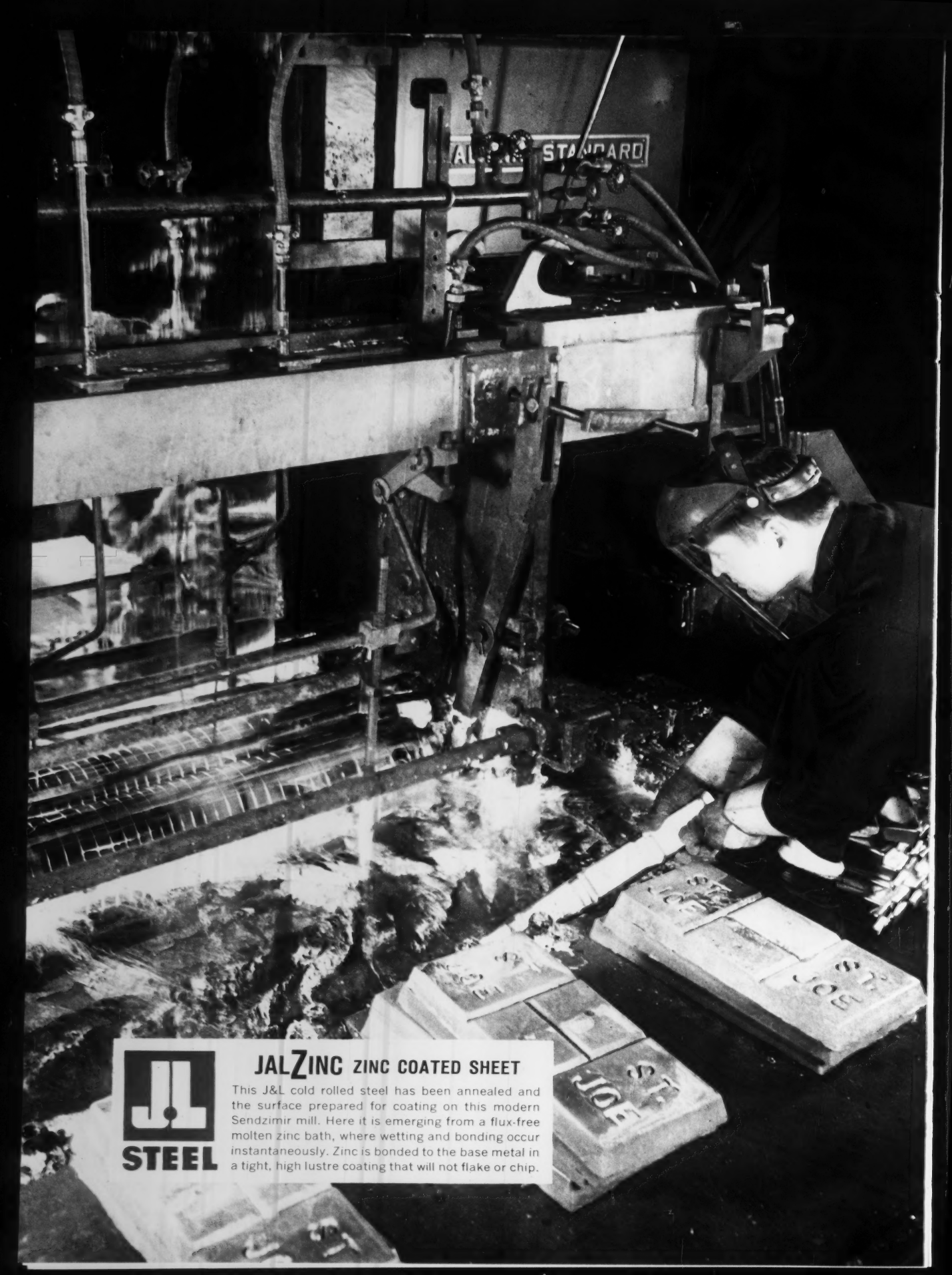
Quite possibly your Stanscrew fastener specialist can do the same for you. He can bring to your problem years of specialized experience, and the services of an outstanding engineering staff. And he can make recommendations from a complete line . . . always in stock, quickly available.

So for the answer to your "special" fastener problem, just call your Stanscrew distributor today. He will arrange for a meeting with the Stanscrew fastener specialist in the very near future.

STANSCREW FASTENERS

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS
HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT
WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois



J&L STEEL

JALZINC ZINC COATED SHEET

This J&L cold rolled steel has been annealed and the surface prepared for coating on this modern Sendzimir mill. Here it is emerging from a flux-free molten zinc bath, where wetting and bonding occur instantaneously. Zinc is bonded to the base metal in a tight, high lustre coating that will not flake or chip.

"JalZinc gives us maximum corrosion resistance. And there's no flaking in our tough crimping operation."

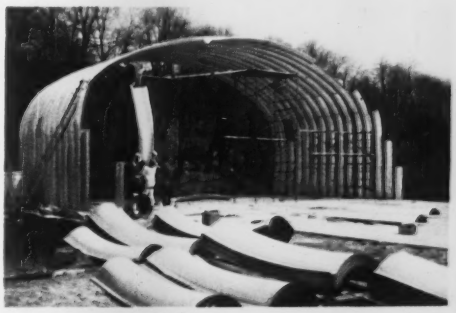
. . . reports builder of unique steel structures

"JalZinc sheets meet our requirement for strong, corrosion-resistant zinc coated sheet that will hold its finish through tough transverse crimping operations," states Mr. Peter S. Pedersen, Jr., president of Wonder Building Corporation of America, Chicago.

JalZinc is produced by J&L, a major integrated steel producer, under the most rigid quality control. J&L's modern continuous galvanizing process coats the steel with a bright, uniform spangle that improves end product appearance.

Sheet metal users across the country are finding that JalZinc is a superior quality steel that can be bent, stamped, rolled, crimped beyond belief without damage to the coating.

Ask your distributor about JalZinc for your next job, or write Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Penna.



These pre-engineered trussless steel structures are fabricated at the Wonder Building plant, Chicago, from 18 gauge JalZinc sheets.

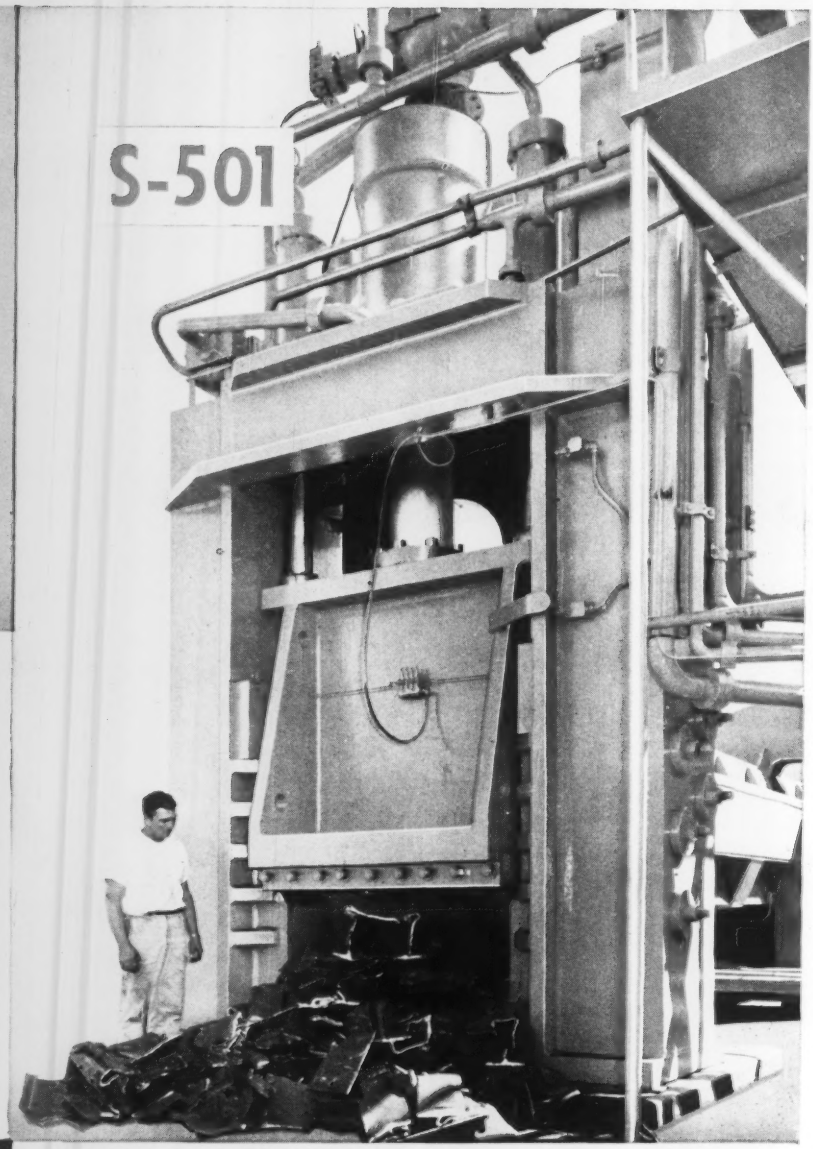
Superior quality JalZinc is readily available in a wide range of gauges and widths in both cut lengths and coils.

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

STEEL

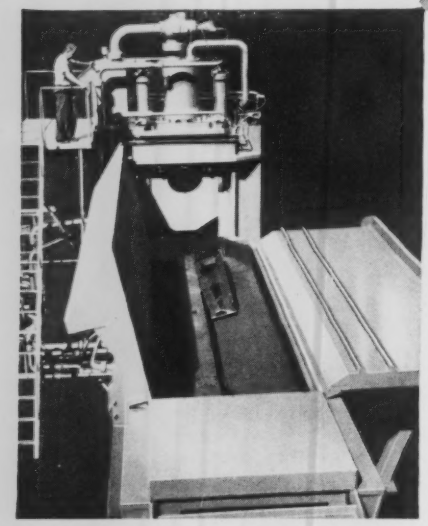
CUTS 200 TONS PLATE SCRAP IN EIGHT HOURS



production is continuous

labor costs 70% lower

The Harris Shear is revolutionary in design. It is the first new development in the scrap industry since the introduction of the Baling Press. Railroad scrap, pipe, farm, industrial, automobile and miscellaneous junk shop scrap work through on a 12 second cycle. A 3 man crew and a crane handle the job in all kinds of weather.



The Harris Shear brings new profits to Scrap Yards

The charging box is 264" x 80" x 30". It has a flat type loading hopper. The cover and charging ram operate like a baler. This means more material under each stroke of the knife.

HARRIS FOUNDRY & MACHINE CO.

Hydraulic Engineers Since 1889

CORDELE, GEORGIA

▶ *Talk with a Man from Harris*

Market Outlook

Construction Spurs Recovery

BOLSTERED by construction demand, the steel industry is making steady progress toward year-end recovery.

Building requirements are at a seasonal peak, helping to offset the unexpected slowness in automotive buying. During July, construction contracts totaled more than $3.6 billion, 24 per cent more than in the same month of 1957. Bookings for May, June, and July surpassed those of any three-month period on record. Biggest gains are being made in public, residential, and highway construction.

FABRICATORS KEEP PACE— Reflecting the increased tempo of building activity, July sales of fabricated structural steel reached the highest level in 14 months. Fabricators booked orders for 330,890 tons, compared with a monthly average of 214,000 tons since recession hit the industry in June, 1957. "The jump in steel bookings during July marks the seventh consecutive month that sales have increased and reflects the sharpest recovery ever registered by the construction industry," says L. Abbett Post, executive vice president of the American Institute of Steel Construction.

BRIGHT OUTLOOK— While new orders for fabricated structurals were soaring, shipments dropped slightly during July. For the first time this year, bookings exceeded shipments. As their backlogs grow, fabricators will abandon hand-to-mouth buying policies and build their inventories of structural shapes.

REINFORCING BARS GAIN—Aided by federal highway programs, demand for reinforcing bars has improved steadily. After lagging far behind last year's figures, shipments in May topped those of May, 1957. June shipments were the largest in two years.

GALVANIZED SHEETS ACTIVE— Continued demand for zinc-coated sheets keeps most of the galvanizing lines running close to capacity. Construction requirements are as strong as ever, and farmers need substantial tonnages for grain bins. In the Chicago area, one mill can't deliver new orders before October. Another is promising shipment by November.

RAILROADS BUYING— Depressed all year, the railroad equipment market is showing signs of life. The Pennsylvania Railroad will soon start building 900 seventy-ton hoppers at its Altoona, Pa., shops. The New York Central is ordering steel for 500 hoppers which it will build at its dispatch shops, East Rochester, N. Y. Few steelmakers expect much improvement in railroad demand before the first quarter of 1959, and some aren't too confident that it will come then. The promise of government aid hasn't convinced many carriers they should invest in new equipment.

APPLIANCES ON UPGRADE— Household appliances are moving briskly at the retail level, breaking the log jam of finished goods that has blocked sheet orders. "I believe that the recession in the appliance industry definitely has bottomed out, and our business is once more on its way upward," says Fred Maytag II, president, Maytag Co., Newton, Iowa.

PRODUCTION LEVELS OFF— After eight straight weeks of improvement, steel production declined slightly last week. Furnaces were operated at 63 per cent of capacity, down half a point. Output was about 1.7 million tons of steel for ingots and castings. Considering that steelmakers had to pay double time and a quarter for holiday work, the cutback was remarkably small. During the week of July 4, production fell 10 points.

WHERE TO FIND MARKETS & PRICES

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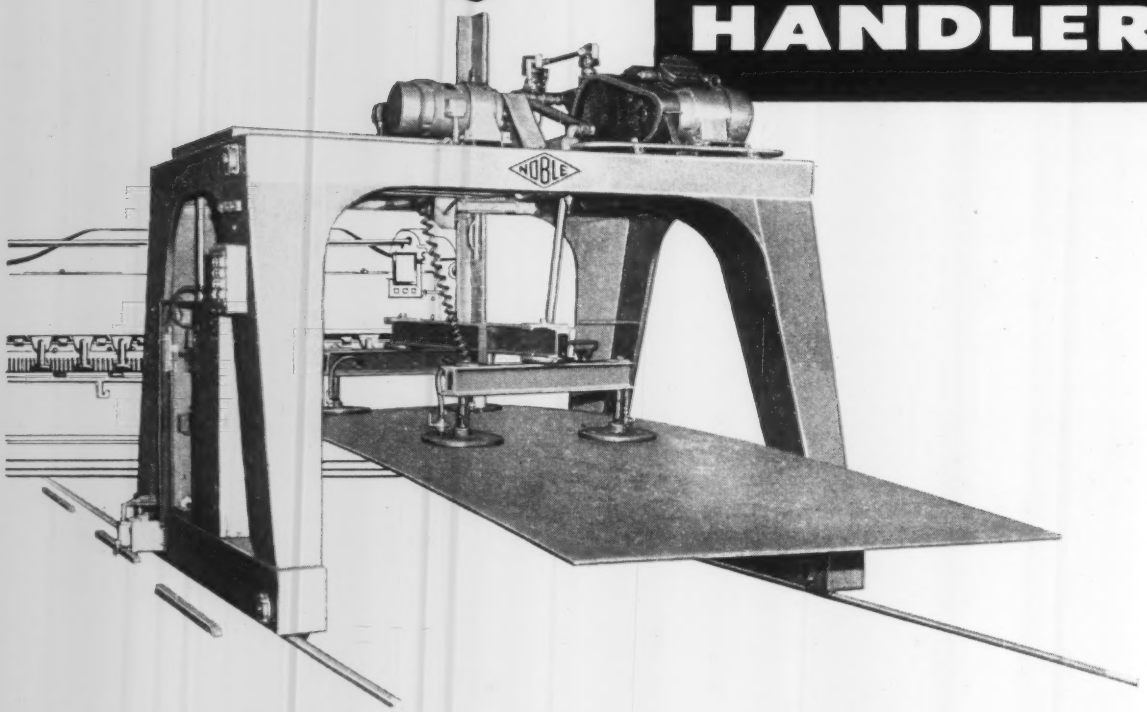
How to Make Your Shear a Production Tool

–ADD A NOBLE *Automatic* PLATE HANDLER



Faster Plate Handling at Lower Cost

The NOBLE Automatic Plate Handler eliminates the 3 slow, costly and often dangerous manual operations sketched at left. The usual 2- or 3-man crew needed to pry up the plate, attach lifting hooks, operate the crane or hoist and move the plate into position is eliminated. At a touch of the control button, your NOBLE Automatic travels to the stack, picks up a plate, raises it to proper height, brings it right to the ball points or casters and puts it into position for shearing, punching, or whatever operation is required. Machine operators and their helpers spend their time on production, not manhandling plate!

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With a NOBLE Automatic on the job, there's always a plate ready at the machine — no idle standby while operators help wrestle another one off the pile and onto the feed table. You get maximum earning power out of your machine investment.

INCREASED PRODUCTION...

The natural result of reduced idle machine time and faster plate handling. NOBLE Automatic Plate Handler users report a gain of 20% or more, depending on type of application.

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Standard NOBLE automatic plate handling systems are available in floor-mounted rail, overhead rail and radial transfer types. Standard capacities are 1,000, 2,000, 3,000 and 4,000 lbs.

NEW BROCHURE AVAILABLE... describes economies of automatic plate handling, proper applications, typical system layouts, and all NOBLE equipment involved. Write for your free copy today; please address Dept. S-9.

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Wanted: Bigger Orders

Warehousemen begin drive to win more three and four ton orders. Opening gun is an increase in discounts on sales of more than 5000 lb of each hot-rolled product

LOOKING for a bargain? Steel service centers are offering increased discounts (lowering prices) to buyers who will order large amounts of hot-rolled steel products from them. It's part of an all-out drive to recapture some of the three and four ton orders which slipped away when steel became freely available from mills last year.

Higher discounts went into effect last month on orders of more than 5000 lb of each hot-rolled carbon steel product from warehouses. Distributors in some areas upped their base prices on plates, bars, and structural shapes, following mill price hikes, but higher discounts for the large volume buyer in those areas wiped out this increase. Buyers of 5000 lb or more of hot-rolled sheets enjoy greater savings. Higher discounts apply despite no increase in the warehouse base price of that product.

What Warehouses Did—A Cleveland distributor has provided figures showing the change in discounts, which have been put into table form for quick reading:

Quantity	Discount per ton Old	New
5,000 to 10,000 lb	$2	$10
10,000 to 20,000 lb	6	15
20,000 to 30,000 lb	12	20
30,000 lb or more	20	30

Cleveland warehouses upped the price of structural shapes by $7.60 a ton last month; hot-rolled bars were increased by $8.20, and plates by $6.80. The price of hot-rolled sheets was not changed. Adding $8 a ton to the 5000 to 10,000 lb discount resulted in a net saving for buyers of all products except bars.

What Warehouses Want—Distributors say their average order declined from above 1500 lb to about 1000 lb between early 1957 and mid-1958. An eastern firm's sales manager complains: "There's an equal amount of paperwork and red tape involved in handling a 1-lb order as in handling a 5000-lb order. While we welcome the small order, we need a few big orders to keep our profits high enough to remain in business. With mills able to accept many orders which we formerly filled, we've had to map new strategy to win back the 5000-lb buyer."

Distributors report only moderate success so far. Sales are slightly higher than they were in August, but most of the increase is in orders of 1000 to 1500 lb. Suppliers to the appliance industry are increasing their orders. Others are holding back.

"Buyers don't place large orders, even if they can save money by doing so," reports one distributor. "They're afraid an automotive strike could cut their operations, leaving them with excess steel in their plants. By the fourth quarter, our customers' steel requirements should increase, if the strike threat is dispelled. They'll have more incentive to add to stocks. Our increased discounts ought to win us a few big orders then."

Another warehouseman predicts: "Mills won't be able to fill three-ton orders for hot-rolled sheets and other products as easily in the fourth quarter as they can now. They will have to concentrate on larger orders from automakers. We think many of our old large-volume customers will return to us by the end of this year."

Costs Fall as Discounts Rise

Here's how increased warehouse discounts save money for large volume buyers. A Cleveland user of carbon steel plates would face these costs in buying from a steel service center:

	Before price and discount change		Now	
	Cost of 5500-lb order (Per ton)	Cost of 35,000-lb order (Per ton)	Cost of* 5500-lb order (Per ton)	Cost of 35,000-lb order (Per ton)
BASE PRICE	$175.80	$175.80	$182.60	$182.60
DISCOUNT	$2.00	$20.00	$10.00	$30.00
TOTAL PRICE*	$173.80	$155.80	$172.60	$152.80

*Subject to extras and delivery charges.

Distributors . . .

Prices, Page 141

Some pickup in demand for steel products from warehouses is expected this month as manufacturers swing into their fall production campaigns. With consumers' stocks down, it is thought buying will be fairly spirited before the end of the month, especially should automotive requirements expand noticeably in the weeks ahead.

Sales fell at most points during August. Chief reason: Vacations. Most distributors are optimistic for volume this month and next. Generally, stocks at steel service centers are adequate.

The price situation is causing some concern. At Houston, for example, there is talk of newly published prices slipping—some price cutting is reported. Distributors in

HOW TO MAKE YOUR $'S DEGREASE MORE PARTS

You make no profit on the time you spend cleaning out a degreaser.

You cut another slice off the top of profits whenever you have to add fresh stabilizer to your trichlorethylene bath.

When a bath goes "sour" while you're processing, you lose still more time and money.

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Trichlor is trichlor the world over: it's the *stabilizer* in your trichlor that can make the difference.

The difference in Nialk® stabilizer is *psp*—permanent staying power.

Nialk stabilizer is neutral. It cannot react with acids to form corrosive salts. Still it "accepts" acids and renders them completely harmless. The Nialk stabilizer will not stain or discolor your parts or allow your bath to become "sour."

You never add fresh stabilizer to a Nialk bath. The stabilizer stays potent no matter how long you use it. It's insoluble in water so you don't lose it during steam distillation or in the water separator of your degreaser.

Nialk frees your bath of those degradation products which settle on coils and cut down heat transfer. Cleanouts are widely spaced and quickly finished.

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the Pacific Northwest say imported steel is being offered at prices far below those quoted on domestic products. Both Europe and Japan are quoting reinforcing bars at $42.50 a ton below the American prices.

Although Seattle warehouses say they prefer to stick with domestic suppliers, fairly large steel imports have been booked by Portland and Los Angeles sellers.

Construction has started on a 45,023 sq ft. sheet processing plant at the Los Angeles district headquarters of the U. S. Steel Supply Div., United States Steel Corporation.

Lower prices on hot-rolled carbon steel products were effected last week by W. E. Clark Co. Inc., Everett, Mass., serving central and eastern Massachusetts, southern New Hampshire and Rhode Island. The firm has established a new eastern pricing area for hot-rolled structural shapes, bars, plates, and sheets which not only reduces prices in the territory served, but eliminates alleged discrepancies which prevailed in the former method of pricing these products in nonmetropolitan sections.

Maynard L. Diamond, president of the company, pointed out that formerly steel users in cities and towns not in major consuming areas had to pay additional shipping charges from point of shipment; now, all consumers in the new eastern area get equitable delivered prices. He said that in the past there were instances where competitors less than two miles apart had cost differentials of as much as $4 a ton.

In addition to establishing the new eastern pricing area, the Clark company has increased discounts on orders of 2½ tons and over. The new prices are as follows: Structural shapes, $10.10 per cwt.; stair channels, $11.11; junior beams, $10.36; carbon bars and bar shapes, $10.21; hot-rolled strip, $9.83; plates, $10.12; floor plates, $11.95; hot-rolled sheets, $9.41.

The new prices apply to all of Rhode Island, Worcester County and east in Massachusetts, and the counties of Hillsboro and Rockingham, N. H. No change was made in prices for western Massachusetts, Vermont, and northern New Hampshire.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 137 & 138

Most sheet consumers have stepped up their orders. While they are not sure of the labor situation in the automotive industry, many buyers detect some increase in delivery promises, and they are laying in a little more tonnage for stock, as well as for meeting current needs.

Stove builders, manufacturers of metal furniture, water heaters, refrigerators, steel barrels, and drums are specifying fairly well. Automotive orders are coming in, but the mills are not swamped with them. Even at that, the volume is better than it was a year ago with the car manufacturers ordering September and October needs. Commitments would be heavier were it not for the uncertain labor outlook.

More Active — Appliance makers are doing better, particularly in the heavier lines. They are buying steel at the heaviest rate this year. Latest indication of better things ahead comes from Maytag president Fred Maytag II, who told the appliance dealers in New York: "The recession in the appliance industry definitely has bottomed out, and our business is once more on the way upward."

"Automotive companies aren't ordering enough steel to keep up with the production schedules they've announced," says a Pittsburgh sheetmaker. "They're counting on quick delivery. A customer may tell us that he wants 2000 tons a month, but instead of giving us a 2000-ton order, he releases 1000 tons every two weeks."

Deliveries Widen — Delivery promises on hot-rolled sheets are running nearer four weeks than three; on cold rolled they range four to five weeks. One large producer of galvanized sheets has nothing to offer under six weeks.

Grain bins account for a substantial tonnage. One midwest mill can't deliver on new business before October and another before November.

Promises on enameling stock run

(*Please turn to Page* 132)

New Positive Rake
ARMSTRONG
Carbide Insert
TOOL HOLDERS

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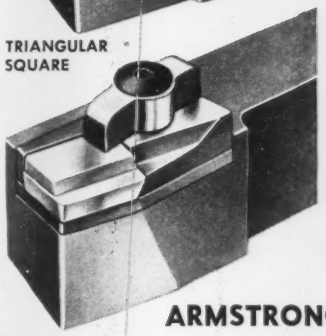

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These positive rake Carbide Insert Tool Holders are for every day tool room and production turning on engine lathes, turret lathes and screw machines. They permit increased cutting speeds associated with the use of carbides and they entirely eliminate carbide tool grinding.

Low cost positive rake ARMIDE "throw away" Inserts provide three or four cutting edges per insert. Triangular inserts have three, square inserts four cutting edges. They are available in three grades of ARMIDE: 350, 370 or 883.

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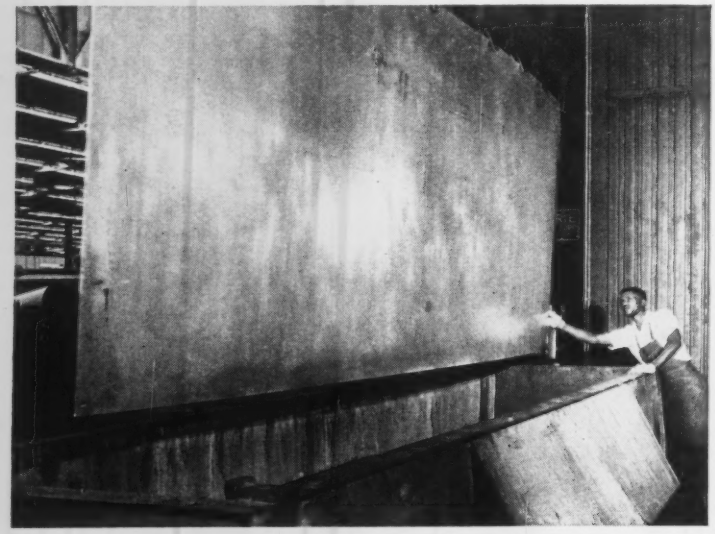
An exclusively developed neutral stabilizer in Columbia-Southern Trichlorethylene has aided metal fabricators in eliminating a number of troublesome degreasing problems.

In the past, many plants experienced extreme difficulties, resulting in damage to work or the degreaser itself. Frequently these difficulties could be traced to use of solvents "stabilized" with the inadequate alkaline amines.

Columbia-Southern Trichlor, on the other hand, is formulated to provide a stabilizer that assures built-in chemical protection against breakdown under light, heat, oxygen, acids, moisture and repeated distillations.



Aluminum sheet and formed parts are particularly sensitive to improperly stabilized solvent. Neutrally stabilized Columbia-Southern Trichlor is now specified by many large volume aluminum fabricators.

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Vapor degreasing offers an extremely flexible and low-cost cleaning method for parts ranging in composition from aluminum to steel, zinc, brass, magnesium, titanium, special alloys; running in weight from 268 ton generator stators to 1/240 oz. watch gears.

Columbia-Southern Trichlor is completely suitable for removing grinding and buffing compounds, graphite, grease, coolants, quenching and lubricating oils, other contaminants from the most intricately drawn or shaped parts. Parts come out thoroughly clean and dry, ready for next operation.

As a further bonus, Columbia-Southern Technical Service representatives work with customers in trouble-shooting and in establishing more effective and economical procedures for degreasing. These men have earned a reputation for solving the problem. Their services are at your disposal.

Have Columbia-Southern's experts check the efficiency of *your* vapor degreasing operation or help *you* with your solvent specifications. Just contact our Pittsburgh address, or any of the fourteen conveniently located District Sales Offices listed below.

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(*Concluded from Page 129*)

around six weeks also, while silicon sheets range from five weeks to two months, with shipments on the higher grades being most extended.

Demand for sheets and strip is heavier for September shipment in New England. Small tonnage is being placed for October delivery, but most orders stress prompt shipment. Buying by automotive suppliers is more active. Stainless sheets, 430 grade, are more active. Orders are predicated largely on depleted inventories, but a slight increase in consumption, barring an auto strike, is expected in fourth quarter.

Higher Prices — Improvement is more impressive in sheet and strip specialties than in the straight carbon grades. Alloy strip prices have advanced $10 a ton, and, while tempered spring steel has also increased, producers are slow to act on annealed cold-finished spring strip. There are some indications prices on this grade in various carbon ranges may not be changed.

Inland Steel Co. has put back into operation its 76-in. strip mill after idling it about ten days in late August while some equipment changes were made.

Steel Bars . . .

Bar Prices, Page 136

Commercial steel bar business is edging upward, with deliveries easy and the market still having a way to go before reaching normal. It needs a good boost from automotive and related consuming lines, which may come soon unless serious labor troubles develop.

The railroads are specifying a little more actively, but prospects of any important increase in this area of demand over the next several weeks are lacking. Fastener manufacturers are ordering moderately. They need auto business, but report excellent requirements on structural account.

Steel service centers hold substantial inventories and are not ordering new tonnage actively, though their specifications are up a little in some market areas.

Cold-finished bars are moving sluggishly. Many sizes are available from stock. Midwestern buyers are having no trouble getting their needs promptly filled. Rolling schedules are fairly flexible and makers can give good deliveries in most sizes.

September bookings are reported up slightly in New England, with deliveries in the area running two to three weeks. District sellers note a slight improvement in demand for stainless steel forging billets, but sizable inventories of finished goods fabricated from bars sold through distributors are substantial. This holds back forward buying.

Wire . . .

Wire Prices, Pages 138 & 139

High carbon wire specialty bookings are 10 to 15 per cent higher for September, with some October orders being placed. Consumer inventories are subnormal in most cases, and the bulk of tonnage being placed is for prompt shipment to meet slightly increased demand for fabricated wire products.

Fastener, cold-heading, and spring grades are more active, but an auto strike would slow down buying.

Rod orders are not matching demand for finished wire in New England. Numerous nonintegrated producers are filling the bulge in their needs with semifinished in inventory.

Rope wire prices have been advanced $14 a ton. Other wire price adjustments are being made.

Tubular Goods . . .

Tubular Goods Prices, Page 140

The tube market has changed little over the last couple weeks.

A Pittsburgh district mill reports order volume unchanged, with oil country goods still being bought hand to mouth. Customers want delivery on the day they order. As a result, shipments are being made mostly from down-river stocks.

Although the Memphis decision has retarded the construction of gas transmission lines, one producer expects to ship several good-sized orders of line pipe (10,000 to 15,000 tons) before yearend.

"Seamless demand is picking up a bit," says a Pittsburgh producer. "Buttweld sales are fairly good. In August, we booked about 50 per cent of our capacity. We're hop-

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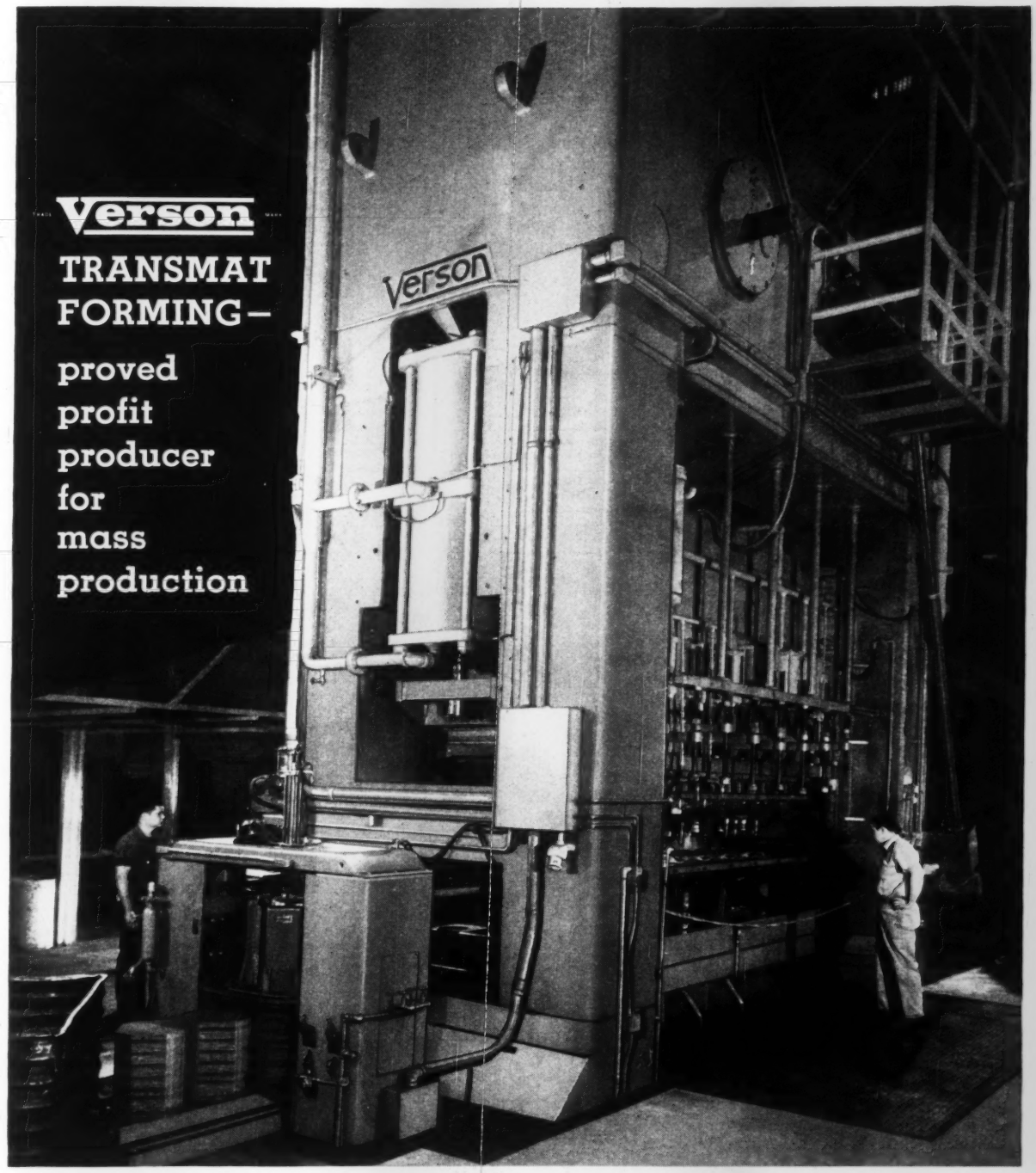

If the squeeze on profits is hurting you, it is time to consider Verson Transmat Forming for any stampings you must produce in quantity. For twenty years the Verson Transmat Process has been proving itself a real profit builder on stampings of virtually all sizes and shapes.

This press at Kelsey-Hayes Company is a good example of what Transmat forming can do. It produces complete automobile wheel spiders in seven operations without intermediate handling, pickling or annealing. Operating speed is 18 strokes per minute, with a finished spider discharged at each stroke.

Talk over your quantity stamping requirements with Verson engineers. Their cost conscious approach to your problems pays off in better returns to you. Write or phone, today.

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ing for a 10 to 15 per cent improvement this month."

Demand for cast iron pipe is slow, but Pacific northwest district sales agencies expect a fair volume of business to develop over the next 60 days. Recent placements there have been mostly small tonnages. No major projects are before the market..

Tool Steel . . .

Tool Steel Prices, Page 140

Shipments of high speed and tool steel (excluding hollow drill steel) amounted to 3891 net tons in July, reports the American Iron & Steel Institute. In June, 5048 tons were shipped; in July, 1957, 6034 tons.

Total movement in the first seven months this year was 38,063 net tons, compared with 62,117 in the like period last year.

Rails, Cars . . .

Track Material Prices, Page 139

A slight stir is noted in the railroad equipment field. Pennsylvania Railroad is scheduled shortly to start building 900 seventy-ton hoppers at its Altoona, Pa., shops, and the New York Central is placing steel for building 500 hoppers at its Dispatch Shops, East Rochester, N. Y.

A few small inquiries are noted. However, most steel suppliers look for no decided improvement in railroad equipment demand until the turn of the year. Some are not too sure it will come then. Carriers need new equipment, but financing remains a problem.

Pig Iron . . .

Pig Iron Prices, Page 141

Merchant pig iron sellers report a small improvement in demand during August, and they anticipate a more substantial betterment this month with foundry operations gaining. Not much buying for inventory is expected, though consumer stocks are low. Users are favored by plentiful supplies and easy deliveries.

Production is rising. In the Buffalo district, the Tonawanda Iron Div., American Standard Sanitary Mfg. Co. has blown in its blast furnace—it was down for major repairs. Another merchant ironmaker in the district is expected to step up operations shortly.

Iron Ore Statistics—July, 1958

(Gross tons)

	U. S. Ores		Canadian		Foreign	
Stocks at	L. Superior	Other	L. Superior	Other	Ores	Totals
U. S. Furnaces						
Eastern	1,545,294	164,273	200,494	1,742,621	4,218,713	10,871,395
Pitts.-Youngstown	10,003,274	39,317	548,527	2,114,667	3,637,684	16,343,469
Cleveland-Detroit	9,183,586	132,509	183,440	298,148	407,568	10,205,251
Chicago	11,331,136	(a)	(a)	.....	(a)	11,331,136
Southern	(a)	2,457,199	.....	(a)	1,723,519	4,180,718
Western	.....	793,267	.....	.....	.....	793,267
Total	35,063,290	3,586,565	932,461	4,155,436	9,987,484	53,725,236
At U. S. Docks:						
Lake Erie	3,734,666	.....	91,193	1,043,135	.....	4,868,994
Other	.....	.....	.....	(a)	(a)	(a)
Total	3,734,666	.....	91,193	1,043,135	(a)	4,868,994
Total U. S. Stocks	38,797,956	3,586,565	1,023,654	5,198,571	9,987,484	58,594,230
Total Canadian	1,599,609	.....	92,070	537,969	103,727	2,333,375
Total U. S. & Canada	40,397,565	3,586,565	1,115,724	5,736,540	10,091,211	60,927,605

CONSUMPTION OF IRON ORE—JULY, 1958

(Gross tons)

	U. S. Ores		Canadian		Foreign	
In U. S. Districts	L. Superior	Other	L. Superior	Other	Ores	Totals
Eastern	396,485	118,368	24,598	233,398	622,109	1,394,958
Pitts.-Youngstown	1,253,405	110,855	58,162	302,154	278,854	2,003,430
Cleveland-Detroit	736,643	27,614	38,997	41,708	44,925	889,887
Chicago	1,348,379	(a)	(a)	.....	(a)	1,348,379
Southern	(a)	409,798	.....	(a)	137,754	547,552
Western	.....	439,458	.....	.....	.....	439,458
In U. S.						
Blast furnaces	3,062,529	784,922	105,281	303,314	401,369	4,657,415
Steel furnaces	147,401	46,600	15,556	13,021	299,342	521,920
Sintering (1)	524,976	274,571	920	260,925	382,931	1,444,323
Miscellaneous (2)	6	.....	.....	.....	.....	6
Total U. S.	3,734,912	1,106,093	121,757	577,260	1,083,642	6,623,664
In Canada						
Blast furnaces	267,281	.....	58,402	69,873	.....	395,556
Steel furnaces	20,319	.....	.....	4,904	9,786	35,009
Sintering (1)	53,952	.....	55	14,105	.....	68,112
Miscellaneous (2)	.....	.....	.....	.....	.....	.....
Total Canada	341,552	.....	58,457	88,882	9,786	498,677
Total U. S.-Canada	4,076,464	1,106,093	180,214	666,142	1,093,428	7,122,341

(a) Small tonnage included in other districts to avoid disclosure. (1) Iron ore and concentrates consumed in sintering plants not located at mine site. (2) Sold to nonreporting companies or used for purposes not listed.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

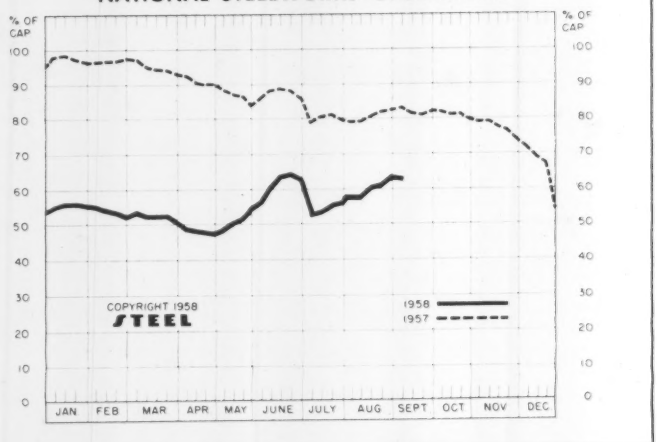
	Week Ended Sept. 7	Change	Same Week 1957	Same Week 1956
Pittsburgh	54.0	— 2.0	80.5	97
Chicago	76.0	+ 2.0	84	101
Eastern	63.0	+ 2.0	85	97
Youngstown	50.0	+ 2.0	79	105
Wheeling	68.5	— 11.5	92.5	98
Cleveland	52.5	— 2.5*	80.5	102.5
Buffalo	51.5	0	100	107
Birmingham	52.0	— 1.5	85	96
Cincinnati	77.0	— 0.5	81.5	90
St. Louis	79.0	— 3.0	73.5	88
Detroit	74.0	+ 0.5*	94	91
Western	70.0	+ 0.5	96	94
National Rate	63.0	— 0.5	83	98

INGOT PRODUCTION‡

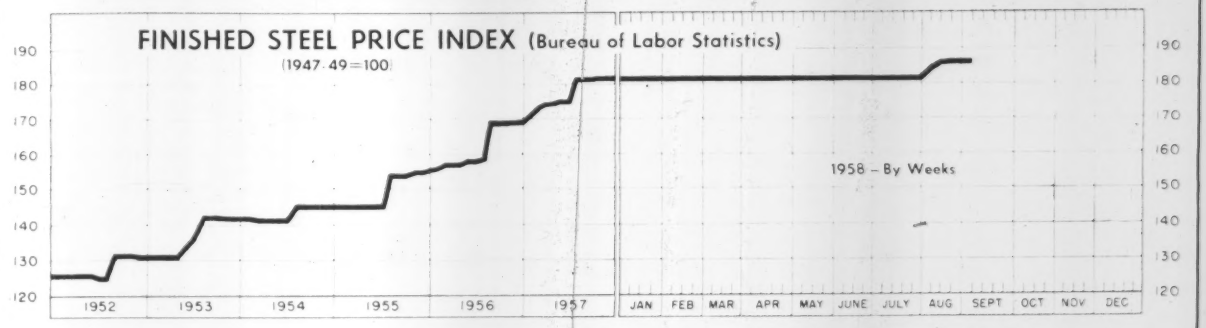
	Week Ended Sept. 7	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	106.3†	106.8	98.7	129.0
NET TONS (In thousands)	1,707†	1,715	1,586	2,073

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Sept. 2, 1958	Week Ago	Month Ago	Aug. Avg	Year Ago
186.5	186.4	181.5	181.4	181.5

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Sept. 2

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.675	Bars, Reinforcing	6.335
Rails, Light, 40 lb	7.142	Bars, C.F., Carbon	10.710
Tie Plates	6.692	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	62.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.545
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.625
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	20.525
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.975
		Pipe, Line (100 ft)	205.710
		Casing, Oil Well, Carbon (100 ft)	201.090
		Casing, Oil Well, Alloy (100 ft)	315.243
Tubes, Boiler (100 ft)	51.200	Black Plate, Canmaking Quality (95 lb base box)	7.583
Tubing, Mechanical, Carbon (100 ft)	26.157	Wire, Drawn, Carbon	10.575
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608	Wire, Drawn, Stainless, 430 (lb)	0.653
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483	Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Sept. 3 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	246.65	246.65	245.03	239.15	189.38
Index in cents per lb	6.682	6.682	6.638	6.479	5.130

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$149.28	$149.28	$148.74	$146.19	$115.56
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	42.67	41.67	42.00	51.83	40.50

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Sept. 3 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	7.975	5.725	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.275	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.275	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.10	5.10	4.10
Plates, Chicago	5.30	5.30	5.10	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.50	4.35
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.70	4.55
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R. Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.075
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.975-4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45-5.95
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.475-5.625
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.35-6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL	Sept. 3 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$74.50
Wire rods 3/8-5/8" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton	Sept. 3 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.01	60.75
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.51	61.25
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm. deld. Cin	70.70	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00‡	200.00*

†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$42.50	$42.50	$44.50	$53.50	$42.50
No. 1 Heavy Melt, E. Pa.	40.00	39.00	38.00	51.00	41.50
No. 1 Heavy Melt, Chicago	45.50	43.50	43.50	54.50	41.50
No. 1 Heavy Melt, Valley	43.50	43.50	43.50	54.50	41.50
No. 1 Heavy Melt, Cleve.	40.00	40.00	40.00	51.50	40.50
No. 1 Heavy Melt, Buffalo	34.50	34.50	34.50	49.50	41.50
Rails, Rerolling, Chicago	64.50	64.50	64.50	67.50	54.00
No. 1 Cast, Chicago	46.50	45.50	45.50	44.50	38.00

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75

Steel Prices

Mill prices as reported to STEEL, Sept. 3, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicates producing company. Key to producers, page 137; footnotes, page 139.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ....$76.00

INGOTS, Alloy (NT)
Detroit S41 ....$82.00
Farrell,Pa. S3 ....82.00
Lowellville,O. S3 ....82.00
Midland,Pa. C18 ....82.00
Munhall,Pa. U5 ....82.00
Sharon,Pa. S3 ....82.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bartonville,Ill. K4 ....$82.00
Bartonville,Ill. K4 ....$82.00
Buffalo R2 ....80.00
Clairton,Pa. U5 ....80.00
Ensley,Ala. T2 ....80.00
Fairfield,Ala. T2 ....80.00
Fontana,Calif. K1 ....90.50
Gary,Ind. U5 ....80.00
Johnstown,Pa. B2 ....80.00
Lackawanna,N.Y. B2 ..80.00
Munhall,Pa. U5 ....80.00
Owensboro,Ky. G8 ....77.50
S.Chicago,Ill. R2, U5 ..80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 ....80.00
Youngstown R2 ....80.00

Carbon, Forging (NT)
Bessemer,Pa. N5 ....$99.50
Buffalo R2 ....99.50
Canton,O. R2 ....102.00
Clairton,Pa. U5 ....99.50
Conshohocken,Pa. A3..104.50
Ensley,Ala. T2 ....99.50
Fairfield,Ala. T2 ....99.50
Farrell,Pa. S3 ....99.50
Fontana,Calif. K1 ....109.00
Gary,Ind. U5 ....99.50
Geneva,Utah C11 ....99.50
Houston S5 ....104.50
Johnstown,Pa. B2 ....99.50
Lackawanna,N.Y. B2 ..99.50
LosAngeles B3 ....109.00
Midland,Pa. C18 ....99.50
Munhall,Pa. U5 ....99.50
Owensboro,Ky. C8 ....96.00
Seattle B3 ....113.00
Sharon,Pa. S3 ....99.50
S.Chicago R2, U5, W14..99.50
S.Duquesne,Pa. U5 ...99.50
S.SanFrancisco B3 ...109.00
Warren,O. C17 ....99.50

Alloy, Forging (NT)
Bethlehem,Pa. R2 ...$119.00
Bridgeport,Conn. C32 .119.00
Buffalo R2 ....119.00
Canton,O. R2, T7 ....119.00
Conshohocken,Pa. A3..126.00
Detroit S41 ....119.00
Economy,Pa. B14 ....114.00
Farrell,Pa. S3 ....119.00
Fontana,Calif. K1 ....140.00
Gary,Ind. U5 ....119.00
Houston S5 ....124.00
Ind.Harbor,Ind. Y1 ...119.00
Johnstown,Pa. B2 ...119.00
Lackawanna,N.Y. B2..119.00
LosAngeles B3 ....139.00
Lowellville,O. S3 ....119.00
Massillon,O. R2 ....119.00
Midland,Pa. C18 ....119.00
Munhall,Pa. U5 ....119.00
Owensboro,Ky. G8 ...114.00
Sharon,Pa. S3 ....119.00
S.Chicago R2,U5,W14 .119.00
S.Duquesne,Pa. U5 ...119.00
Struthers,O. Y1 ....119.00
Warren,O. C17 ....119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ....$122.50
Canton,O. R2 ....125.00
Cleveland R2 ....122.50
Gary,Ind. U5 ....122.50
S.Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 ...122.50
Warren,O. C17 ....122.50

SKELP
Aliquippa,Pa. J5 ....5.05
Munhall,Pa. U5 ....5.05
Pittsburgh J5 ....5.05
Warren,O. R2 ....5.05
Youngstown R2, U5 ...5.05

WIRE RODS
AlabamaCity,Ala. R2 ..6.40
Aliquippa,Pa. J5 ....6.40
Alton,Ill. L1 ....6.60
Bartonville,Ill. K4 ....6.50
Buffalo W12 ....6.40
Cleveland A7 ....6.40
Donora,Pa. A7 ....6.40
Fairfield,Ala. T2 ....6.40
Houston S5 ....6.65
IndianaHarbor,Ind. Y1..6.40
Johnstown,Pa. B2 ....6.40
Joliet,Ill. A7 ....6.40
KansasCity,Mo. S5 ....6.65
Kokomo,Ind. C16 ....6.50
LosAngeles B3 ....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 ....6.40
N.Tonawanda,N.Y. B11 .6.40
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 ....6.40
Roebling,N.J. R5 ....6.50
S.Chicago,Ill. R2, W14..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 ....6.50
Struthers,O. Y1 ....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.50
Atlanta A11 ....5.70
Aliquippa,Pa. J5 ....5.50
Bessemer,Ala. T2 ....5.50
Bethlehem,Pa. B2 ....5.55
Birmingham C15 ....5.50
Clairton,Pa. U5 ....5.50
Fairfield,Ala. T2 ....5.50
Fontana,Calif. K1 ....6.30
Gary,Ind. U5 ....5.50
Geneva,Utah C11 ....5.50
Houston S5 ....5.60
Ind.Harbor,Ind. I-2, Y1..5.50
Johnstown,Pa. B2 ....5.55
Joliet,Ill. P22 ....5.50
KansasCity,Mo. S5 ....5.60
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 ....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 ....5.50
Niles,Calif. P1 ....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 ....6.25
Seattle B3 ....6.25
S.Chicago,Ill. U5, W14..5.50
S.SanFrancisco B3 ....6.15
Sterling,Ill. N15 ....5.50
Torrance,Calif. C11 ....6.20
Weirton,W.Va. W6 ....5.50

Wide Flange
Bethlehem,Pa. B2 ....5.55
Clairton,Pa. U5 ....5.50
Fontana,Calif. K1 ....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ....5.50
Phoenixville,Pa. P4 ....5.55
S.Chicago,Ill. U5 ....5.50
Weirton,W.Va. W6 ....5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 ....6.80
Clairton,Pa. U5 ....6.80
Gary,Ind. U5 ....6.80
Houston S5 ....6.90
Munhall,Pa. U5 ....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 ....8.05
Bessemer,Ala. T2 ....8.05
Bethlehem,Pa. B2 ....8.10
Clairton,Pa. U5 ....8.05
Fairfield,Ala. T2 ....8.05
Fontana,Calif. K1 ....8.85
Gary,Ind. U5 ....8.05
Geneva,Utah C11 ....8.05
Houston S5 ....8.15
Ind.Harbor,Ind. I-2, Y1..8.05
Johnstown,Pa. B2 ....8.10
KansasCity,Mo. S5 ....8.15
Lackawanna,N.Y. B2 ..8.10
LosAngeles B3 ....8.75
Munhall,Pa. U5 ....8.05
Seattle B3 ....8.80
S.Chicago,Ill. U5, W14..8.05
S.SanFrancisco B3 ....8.70
Struthers,O. Y1 ....8.05

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ....8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 ....8.05
S.Chicago,Ill. U5 ....8.05

PILING

BEARING PILES
Bethlehem,Pa. B2 ....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ....5.50
S.Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ....6.50
Munhall,Pa. U5 ....6.50
S.Chicago,Ill. I-2, U5 ..6.50
Weirton,W.Va. W6 ....6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 ....5.30
Ashland,Ky.(15) A10 ..5.10
Atlanta A11 ....5.50
Bessemer,Ala. T2 ....5.30
Clairton,Pa. U5 ....5.30
Claymont,Del. C22 ....5.30
Cleveland J5, R2 ....5.30
Coatesville,Pa. L7 ....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 ....5.30
Fairfield,Ala. T2 ....5.30
Farrell,Pa. S3 ....5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 ....5.30
Geneva,Utah C11 ....5.30
GraniteCity,Ill. G4 ....5.40
Harrisburg,Pa. P4 ....5.30
Houston S5 ....5.40
Ind.Harbor,Ind. I-2, Y1..5.30
Johnstown,Pa. B2 ....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 ....5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 ....5.30
Newport,Ky. A2 ....5.30
Pittsburgh J5 ....5.30
Riverdale,Ill. A1 ....5.30
Seattle B3 ....6.20
Sharon,Pa. S3 ....5.30
S.Chicago,Ill. U5, W14 .5.30
SparrowsPoint,Md. B2 ..5.30
Sterling,Ill. N15 ....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 ....5.30
Youngstown U5, Y1 ....5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....6.75
Fontana,Calif. K1 ....7.75
Geneva,Utah C11 ....7.05
Houston S5 ....7.15
Johnstown,Pa. B2 ....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron
Economy,Pa. B14 ....13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ....7.95
Bessemer,Ala. T2 ....7.95
Clairton,Pa. U5 ....7.95
Claymont,Del. C22 ....7.95
Cleveland J5, R2 ....7.95
Coatesville,Pa. L7 ....7.625
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 ....7.625
Ecorse,Mich. G5 ....7.95
Fairfield,Ala. T2 ....7.95
Farrell,Pa. S3 ....7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 ....7.95
Geneva,Utah C11 ....7.95
Houston S5 ....8.05
Ind.Harbor,Ind. I-2, Y1..7.95
Johnstown,Pa. B2 ....7.95
Munhall,Pa. U5 ....7.95
Pittsburgh J5 ....7.95
Seattle B3 ....8.85
Sharon,Pa. S3 ....7.95
S.Chicago,Ill. U5, W14..7.95
SparrowsPoint,Md. B2 ..7.95
Warren,O. R2 ....7.95
Youngstown U5, Y1 ....7.95

PLATES, ALLOY
Aliquippa,Pa. J5 ....7.50
Claymont,Del. C22 ....7.50
Coatesville,Pa. L17 ....7.50
Economy,Pa. B14 ....7.20
Farrell,Pa. S3 ....7.50
Fontana,Calif. K1 ....8.30
Gary,Ind. U5 ....7.50
Houston S5 ....7.60
Ind.Harbor,Ind. Y1 ....7.50
Johnstown,Pa. B2 ....7.50
Lowellville,O. S3 ....7.50
Munhall,Pa. U5 ....7.50
Newport,Ky. A2 ....7.50
Pittsburgh J5 ....7.50
Seattle B3 ....8.40
Sharon,Pa. S3 ....7.50
S.Chicago,Ill. U5, W14..7.50
SparrowsPoint,Md. B2 ..7.50
Youngstown Y1 ....7.50

FLOOR PLATES
Cleveland J5 ....6.375
Conshohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ....6.375
Munhall,Pa. U5 ....6.375
S.Chicago,Ill. U5 ....6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ...5.35
Ashland l.c.l.(15) A10 ..5.85
Cleveland c.l. R2 ....6.05
Warren,O.c.l. R2 ....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.675
Aliquippa,Pa.(9) J5 ..5.675
Alton,Ill. L1 ....5.875
Atlanta(9) A11 ....5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ...5.675
Buffalo(9) R2 ....5.675
Canton,O.(23) R2 ....6.15
Clairton,Pa.(9) U5 ....5.675
Cleveland(9) R2 ....5.675
Ecorse,Mich.(9) G5 ...5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala.(9) T2 ..5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1 ..6.375
Gary,Ind.(9) U5 ....5.675
Houston(9) S5 ....5.925
Ind.Harbor(9) I-2, Y1 .5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P22 ....5.675
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ...5.675
LosAngeles(9) B3 ....6.375
Massillon,O.(23) R2 ....6.15
Midland,Pa.(23) C18 ..6.025
Milton,Pa. M18 ....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 ....6.375
N.T'wanda,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8..5.425
Pittsburg,Calif.(9) C11.6.375
Pittsburgh(9) J5 ....5.675
Portland,Oreg. O4 ....6.425
Riverdale,Ill.(9) A1 ....5.675
Seattle B3, N14 ....6.425
S.Ch'c'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5..5.675
S.SanFran.,Calif.(9)B3 6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ...5.775
Struthers,O.(9) Y1 ....5.675
Tonawanda,N.Y. B12 ..5.675
Torrance,Calif.(9) C11.6.375
Warren,O. C17 ....6.025
Youngstown(9) R2, U5 5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.725
Bethlehem,Pa. B2 ....6.725
Bridgeport,Conn. C32 ..6.80
Buffalo R2 ....6.725
Canton,O. R2, T7 ....6.725
Clairton,Pa. U5 ....6.725
Detroit S41 ....6.725
Economy,Pa. B14 ....6.475
Ecorse,Mich. G5 ....6.725
Fairless,Pa. U5 ....6.875
Farrell,Pa. S3 ....6.725
Fontana,Calif. K1 ....7.775
Gary,Ind. U5 ....6.725
Houston S5 ....6.975
Ind.Harbor,Ind. I-2, Y1..6.725
Johnstown,Pa. B2 ....6.725
KansasCity,Mo. S5 ....6.975
Lackawanna,N.Y. B2 ..6.725
Lowellville,O. S3 ....6.725
LosAngeles B3 ....7.775
Massillon,O. R2 ....6.725
Midland,Pa. C18 ....6.725
Owensboro,Ky. G8 ....6.475
Pittsburgh J5 ....6.725
Sharon,Pa. S3 ....6.725
S.Chicago R2, U5, W14..6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 ....6.725
Warren,O. C17 ....6.725
Youngstown U5 ....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 ....8.30
Bessemer,Ala. T2 ....8.30
Bethlehem,Pa. B2 ....8.30
Clairton,Pa. U5 ....8.30
Cleveland R2 ....8.30
Ecorse,Mich. G5 ....8.30
Fairfield,Ala. T2 ....8.30
Fontana,Calif. K1 ....8.625
Gary,Ind. U5 ....8.30
Houston S5 ....8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 ....8.30
KansasCity,Mo. S5 ....8.55
Lackawanna,N.Y. B2 ..8.30
LosAngeles B3 ....9.00
Pittsburgh J5 ....8.30
Seattle B3 ....9.05
S.Chicago,Ill. W14 ....8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 ....9.05
Struthers,O. Y1 ....8.30
Youngstown U5 ....8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 ....5.925
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 ....5.775
Sterling,Ill.(1) N15 ..5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ....5.675
Atlanta A11 ....5.875
Joliet,Ill. P22 ....5.675
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 ....6.375
Pittsburgh J5 ....5.675
Portland,Oreg. O4 ....6.425
SanFrancisco S7 ....6.52
Seattle B3 ....6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.80
Clairton,Pa. U5 ....6.80
Gary,Ind. U5 ....6.80
Houston S5 ....7.05
KansasCity,Mo. S5 ....7.05
Pittsburgh J5 ....6.80
Youngstown U5 ....6.80

BARS, C. F. Leaded (Including leaded extra)
Carbon
LosAngeles P2, S30 ..11.75•
Alloy
Ambridge,Pa. W18 ..10.175
BeaverFalls,Pa. M12..10.175
Camden,N.J. P13 ....10.35
Chicago W18 ....10.175
Elyria,O. W8 ....10.175
Monaca,Pa. S17 ....10.175
Newark,N.J. W18 ....10.35
SpringCity,Pa. K3 ....10.35

•Grade A; add 0.050c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....7.65
BeaverFalls,Pa. M12,R2..7.65
Birmingham C15 ....8.25
Buffalo B5 ....7.70
Camden,N.J. P13 ....8.10
Carnegie,Pa. C12 ....7.65
Chicago W18 ....7.65
Cleveland A7, C20 ....7.65
Detroit B5, P17 ....7.85
Detroit S41 ....7.65
Donora,Pa. A7 ....7.65
Elyria,O. W8 ....7.65
FranklinPark,Ill. N5 ....7.65
Gary,Ind. R2 ....7.65
GreenBay,Wis. F7 ....7.65
Hammond,Ind. J5, L2 ..7.65
Hartford,Conn. R2 ....8.15
Harvey,Ill. B5 ....7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2..9.10
Mansfield,Mass. B2 ....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 ....7.65
Monaca,Pa. S17 ....7.65
Newark,N.J. W18 ....8.10
NewCastle,Pa.(17) B4 ..7.65
Pittsburgh J5 ....7.65
Plymouth,Mich. P5 ....7.90
Putnam,Conn. W18 ....8.20
Readville,Mass. C14 ....8.20
S.Chicago,Ill. W14 ....7.65
SpringCity,Pa. K3 ....8.10
Struthers,O. Y1 ....7.65
Warren,O. C17 ....7.65
Willimantic,Conn. J5 ..8.15
Waukegan,Ill. A7 ....7.65
Youngstown F3, Y1....7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19..6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....9.025
BeaverFalls,Pa. M12,R2 9.025
Bethlehem,Pa. B2 ....9.025
Bridgeport,Conn. C32 ..9.175
Buffalo B5 ....9.025
Camden,N.J. P13 ....9.20
Canton,O. T7 ....8.775
Carnegie,Pa. C12 ....9.025
Chicago W18 ....9.025
Cleveland A7, C20 ....9.025
Detroit B5, P17 ....9.225
Detroit S41 ....9.025
Donora,Pa. A7 ....9.025
Elyria,O. W8 ....9.025
FranklinPark,Ill. N5 ....9.025
Gary,Ind. R2 ....9.025
GreenBay,Wis. F7 ....9.025
Hammond,Ind. J5, L2..9.025
Hartford,Conn. R2 ....9.325
Harvey,Ill. B5 ....9.025
Lackawanna,N.Y. B2 ..9.025
LosAngeles P2, S30 ...11.00
Mansfield,Mass. B5 ...9.325
Massillon,O. R2, R8 ...9.025
Midland,Pa. C18 ....9.025
Monaca,Pa. S17 ....9.025
Newark,N.J. W18 ....9.20
Plymouth,Mich. P5 ....9.225
S.Chicago,Ill. W14 ....9.025
SpringCity,Pa. K3 ....9.20
Struthers,O. Y1 ....9.025
Warren,O. C17 ....9.025
Waukegan,Ill. A7 ....9.025
Willimantic,Conn. J5 ..9.325
Worcester,Mass. A7 ....9.325
Youngstown F3, Y1 ....9.025

BARS, Reinforcing (To fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 .....6.375
Ft.Worth,Tex.(4)(26)T4 6.125
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ....5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.625
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.425
S.Chicago,Ill. R2, W14 .5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2 .5.675
Sterling,Ill.(1) N15 ....5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ..6.10
Torrance,Calif. C11 ...6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing (Fabricated; to Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 .....7.60
Lackawanna,N.Y. B2 ...7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.95
SparrowsPt.,Md. B2 ...7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4)(44) I-2 5.675
ChicagoHts.(4) C2 ...5.675
Franklin,Pa.(3) F5 ....5.575
Franklin,Pa.(4) F5 ....5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) M21 .....5.325
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 .....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ...5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ...5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ...5.20
Ind.Harbor,Ind. I-2, Y1 5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ...5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ....5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 .....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14 .5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ...5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ...5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21 .....6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5 .....8.40
Youngstown Y1 .....8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 ....8.025
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14 .7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2 ..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ...7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 ....7.30
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1 .6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ..7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 .....6.275
SparrowsPoint,Md. B2 ..6.275
Steubenville,O. W10 ...6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 ...10.275
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2,Y1 .9.275
Irvin,Pa. U5 .....9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	...
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	...
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ..7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 .....6.875†
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 .....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ..6.975•
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry,O. W10 .6.875•
Middletown,O. A10 ..6.875†
Pittsburg,Calif. C11 ..7.625•
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ...6.875•

•Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.025
SparrowsPt.(39) B2 ..10.025
Pittsburgh J5 .....10.025

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Youngstown J5 .....7.50
Weirton,W.Va. W6 ....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2,Y1.6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 .....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.70
Ind.Harbor,Ind. I-2 ...8.70
Mansfield,O. E6 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke,Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 CarpenterSteelofN.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.
E1 Eastern Gas&FuelAssoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.
H1 Hanna Furnace Corp.
H7 Helical Tube Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.
M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md.Fine&Special.Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.
N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelson Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W.Co.
N20 Neville Ferro Alloy Co.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S10 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.
W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	5.10
Allenport,Pa. P7	5.10
Alton,Ill. L1	5.30
Ashland,Ky.(8) A10	5.10
Atlanta A11	5.10
Bessemer,Ala. T2	5.10
Birmingham C15	5.10
Buffalo(27) R2	5.10
Conshohocken,Pa. A3	5.15
Detroit M1	5.10
Ecorse,Mich. G5	5.10
Fairfield,Ala. T2	5.10
Farrell,Pa. S3	5.10
Fontana,Calif. K1	5.675
Gary,Ind. U5	5.10
Ind.Harbor,Ind. I-2, Y1	5.10
Johnstown,Pa.(25) B2	5.10
Lackaw'na,N.Y.(25) B2	5.10
LosAngeles(25) B3	5.85
Minnequa,Colo. C10	6.20
Riverdale Ill. A1	5.10
SanFrancisco S7	6.60
Seattle(25) B3	6.10
Seattle X14	*6.60*
Sharon,Pa. S3	5.10
S.Chicago W14	5.10
S.SanFrancisco(25) B3	5.85
SparrowsPoint,Md. B2	5.10
Torrance,Calif. C11	5.85
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown U5	5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.10
Farrell,Pa. S3	8.40
Gary,Ind. U5	8.40
Houston S5	8.65
Ind.Harbor,Ind. Y1	8.10
KansasCity,Mo. S5	8.65
LosAngeles B3	9.30
Lowellville,O. S3	8.40
Newport,Ky. A2	8.40
Sharon,Pa. A2, S3	8.40
S.Chicago,Ill. W14	8.40
Youngstown U5	8.10
Youngstown Y1	8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2	7.575
Conshohocken,Pa. A3	7.575
Ecorse,Mich. G5	7.575
Fairfield,Ala. T2	7.575
Farrell,Pa. S3	7.575
Gary,Ind. U5	7.575
Ind.Harbor,Ind. I-2,Y1	7.575
Lackawanna,N.Y. B2	7.575
LosAngeles(25) B3	8.325
Seattle(25) B3	8.575
Sharon,Pa. S3	7.575
S.Chicago,Ill. W14	7.575
S.SanFrancisco(25) B3	8.325
SparrowsPoint,Md. B2	7.575
Warren,O. R2	7.575
Weirton,W.Va. W6	7.575
Youngstown U5, Y1	7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.35
Warren,O. R2	5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.425
Baltimore T6	7.425
Boston T6	7.975
Buffalo S40	7.425
Cleveland A7, J5	7.425
Dearborn,Mich. D3	7.425
Detroit D2, M1, P20	7.425
Dover,O. G6	7.425
Ecorse,Mich. G5	7.15
Evanston,Ill. M22	7.525
Farrell,Pa. S3	7.425
Follansbee,W.Va. F4	7.425
Fontana,Calif. K1	9.00
FranklinPark,Ill. T6	7.525
Ind.Harbor,Ind. Y1	7.425
Indianapolis S41	7.575
LosAngeles J5	9.325
LosAngeles C1	9.20
NewBedford,Mass. B10	7.875
NewBritain,Conn. S15	7.875
NewCastle,Pa. B4, E5	7.425
NewHaven,Conn. D2	7.875
NewKensington,Pa. A6	7.425
Pawtucket,R.I. B3	7.975
Pawtucket,R.I. N8	7.975
Philadelphia P24	7.875
Pittsburgh J5	7.425
Riverdale,Ill. A1	7.525
Rome,N.Y.(32) R6	7.425
Sharon,Pa. S3	7.125
Trenton,N.J.(31) R5	8.875
Wallingford,Conn. W2	7.875
Warren,O. R2, T5	7.425
Weirton,W.Va. W6	7.425
Worcester,Mass. A7	7.975
Youngstown S41, Y1	7.425

STRIP, Cold-Rolled Alloy

Boston T6	15.90
Carnegie,Pa. S18	15.05
Cleveland A7	15.05
Dover,O. G6	15.55
Farrell,Pa. S3	15.55
FranklinPark,Ill. T6	15.55
Harrison,N.J. C18	15.05
Indianapolis S41	15.70
Lowellville,O. S3	15.55
Pawtucket,R.I. N8	15.90
Riverdale,Ill. A1	15.55
Sharon,Pa. S3	15.55
Worcester,Mass. A7	15.35
Youngstown S41	15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.45
Dearborn,Mich. D3	10.80
Dover,O. G6	10.80
Ecorse,Mich. G5	10.50
Farrell,Pa. S3	10.80
Ind.Harbor,Ind. Y1	10.80
Sharon,Pa. S3	10.80
Warren,O. R2	10.80

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	..	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	..	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
NewYork W3	..	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	..	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.85	22.95	27.80
Buffalo W12	18.25	....	....
Fostoria,O. S1	18.30	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.10	21.95	26.30
NewYork W3	18.85	22.95	27.80
Palmer,Mass. W12	*18.85*	....	....
Trenton,N.J. R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown J5	18.45	22.30	26.65

Weirton,W.Va. W6	10.80
Youngstown Y1	10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	8.175

STRIP, C.R. Electrogalvanized

Cleveland A7	7.15*
Dover,O. G6	7.425*
Evanston,Ill. M22	7.525*
Riverdale,Ill. A1	7.525*
Warren,O. B9, S3, T5	7.425*
Worcester,Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3	7.50
Sharon,Pa. S3	7.50

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Farrell,Pa. S3	5.525
Riverdale,Ill. A1	5.675
Sharon,Pa. S3	5.525
Youngstown U5	5.525

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif. K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts. Calif. C11	10.80	11.05
Sp Pt.,Md. B2	10.15	10.40
Weirton,W.Va. W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2, Y1	7.85
Irvin,Pa. U5	7.85
Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)	
Aliquippa,Pa. J5	7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)	
Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)	
Gary,Ind. U5	$11.25

SILICON STEEL

COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65
					Stator
Vandergrift,Pa. U5	....	....	....	....	8.10
Mansfield,O. E6	....	....	....	....	8.10

SHEETS (22 Ga., coils & cut lengths Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	18.10	19.70	20.20	20.70	15.70††	
Butler,Pa. A10	....	19.70	20.20	20.70	....	
Vandergrift,Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	8.00
Aliquippa,Pa. J5	8.00
Alton,Ill. L1	8.20
Atlanta A1	8.00
Bartonville,Ill. K4	8.10
Buffalo W12	8.00
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville,Ind. MS	8.10
Donora,Pa. A7	8.00
Donora,Pa. A7	8.00
Duluth A7	8.00
Fairfield,Ala. T2	8.00
Houston S5	8.25
Jacksonville,Fla.	8.35
Johnstown,Pa. B2	8.00
Joliet,Ill A7	8.00
KansasCity,Mo. S5	8.25
Kokomo,Ind. C16	8.10
LosAngeles B3	8.95
Minnequa,Colo. C10	8.25
Monessen,Pa. P7, P16	8.00
N Tonawanda,N.Y. B11	8.00
Palmer,Mass. W12	8.30
Pittburg,Calif. C11	8.95
Portsmouth,O. P12	8.00
Rankin,Pa. A7	8.00
S Chicago,Ill. R2	8.00
S SanFrancisco C10	8.95
SparrowsPoint,Md. B2	8.10
Sterling,Ill.(1) N15	8.00
Sterling,Ill. N15	8.10
Struthers,O. Y1	8.00
Waukegan,Ill. A7	8.00
Worcester,Mass. A7	8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	13.40
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	12.65
Minnequa,Colo. C10	13.525
Monessen,Pa. P7, P16	12.65
Muncie,Ind. I-7	*13.60*
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	13.70
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	*13.40*
Roebling,N.J. R5	13.70
SparrowsPt.,Md. B2	12.75
Struthers,O. Y1	12.65
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
NewHaven,Conn. A7	10.05
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.75
Roebling,N.J. R5	9.60
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass. A7	10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Bartonville,Ill. K4	9.85
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Fostoria,O. S1	9.80
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Milbury,Mass.(12) N6	10.05
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
Muncie,Ind. I-7	*9.95*
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Wor'ster,Mass.A7,J4,T6	10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	15.80
Bartonville,Ill. K4	15.70
Chicago W13	16.30
Cleveland A7	15.60
Crawfordsville,Ind. MS	15.70
Fostoria,O. S1	15.60
Houston S5	15.85
Jacksonville,Fla. MS	15.95
Johnstown,Pa. B2	15.60
KansasCity,Mo. S5	15.85
Kokomo,Ind. C16	*16.30*
Minnequa,Colo. C10	16.35
Monessen,Pa. P16	15.60
Muncie,Ind. I-7	*16.50*
Palmer,Mass. W12	16.60
S.SanFrancisco C10	17.15
Waukegan,Ill. A7	15.60
Worcester,Mass. T6	16.60
Worcester,Mass. A7	15.90

ROPE WIRE (A)

Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	12.75
Johnstown,Pa. B2	13.45
Monessen,Pa. P7	12.75
Muncie,Ind. I-7	*13.65*
Palmer,Mass. W12	13.75
Portsmouth,O. P12	*13.45*
Roebling,N.J. R5	13.75
St.Louis L8	12.75
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	12.75
Worcester,Mass. I4	*14.75*

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.65

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. M8	11.65
Dover,O. G6	12.35
Farrell,Pa. S3	11.65
Fostoria,O. S1	11.65
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	12.65
Warren,O. B9	11.65
Worcester,Mass. A7	11.95
Worcester,Mass. T6	12.65

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7	$9.10

NAILS, Cut (100 lb keg)
To Dealers (33)

Conshohocken,Pa. A3	$10.30
Wheeling,W.Va. W10	9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill.(37) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. M8	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	172
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	172

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	190§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-14½ga.	J5 190§
Atlanta A11	192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

	An'ld Stone	Galv. Stone
WIRE (16 gage)		
Ala.City,Ala. R2	17.15	18.70**
Aliq'ppa,Pa. J5	17.15	18.95
Bartonville,Ill. K4	17.25	19.05
Cleveland A7	17.15	....
Craw'dsville,Ind. M8	17.25	19.05
Fostoria,O. 61	17.65	19.20†
Houston S5	17.40	18.95**
Jacksonville,Ill. M8	17.25	19.05
Johnstown,Pa. B2	17.15	18.95§
Kan.City,Mo. S5	17.40	....
Kokomo,Ind. C16	17.25	18.80†
Minnequa,Colo. C10	18.10	19.65**
Palmer,Mass. W12	18.15	19.70†
Pitts.,Calif. C11	17.50	19.05†
S.SanFran.Colo. C10	18.20	19.75**
SparrowsPt.,Md. B2	17.25	19.05§
Sterling(37) N15	17.25	19.05††
Waukegan A7	17.15	18.70†
Worcester,Mass. A7	17.45	....

WIRE, Merchant Quality

	An'ld Stone	Galv. Stone
Ala.City,Ala. R2	9.00	9.55**
Aliquippa,Pa. J5	8.65	9.325§
Atlanta(48) A11	8.75	9.425*
Bartonville(48) K4	9.10	9.775
Buffalo W12	9.00	9.55†
Cleveland A7	9.00	....
Crawfordsville M8	8.75	9.425
Donora,Pa. A7	9.00	9.55†
Duluth A7	9.00	9.55†
Fairfield T2	9.00	9.55†
Houston(48) S5	9.25	9.80**
Jacks'ville,Fla. M8	8.75	9.425
Johnstown B2(48)	8.65	9.325§
Joliet,Ill. A7	9.00	9.55†
Kans.City(48) S5	9.25	9.80**
Kokomo(48) C16	9.10	9.65†
LosAngeles B3	9.95	10.625§
Minnequa C10	9.25	9.80**
Monessen P7(48)	8.65	9.325§
Palmer,Mass. W12	9.30	9.85†
Pitts.,Calif. C11	9.95	10.50†
Rankin,Pa. A7	9.00	9.55†
S.Chicago R2	9.00	9.55**
S.SanFran. C10	9.95	10.50**
SparrowsPt.B2(48)	8.75	9.425§
Sterling(48) N15	9.25	9.925††
Sterling(1)(48)	9.15	9.875††
Struthers,O. Y1	9.00	9.65†
Worcester,Mass.A7	9.30	9.85†

Based on zinc price of: *13.50. **5c. ***10c. †Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts

Full Size Body (cut thread)

½ in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1⅛ in. and larger:	
All lengths	35.0

Undersized Body (rolled thread)

½ in. and smaller:	
6 in. and shorter	49.0

Carriage, Machine, Lag Bolts

Hot Galvanized:

½ in. and smaller:	
6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts

½ in. and smaller by 6 in. and shorter	49.0
Large than ½ in. or longer than 6 in.	39.0

Blank Bolts 39.0

Step, Elevator, Tire Bolts 49.0

Stove Bolts, Slotted:

⅛ to ¼ in. incl., 3 in. and shorter	55.0
⅝ to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:

All sizes	55.5

Square Nuts, Reg. & Heavy, Hot Galvanized:

All sizes	41.0

Hex Nuts, Reg. & Heavy, Hot Pressed:

⅜ in. and smaller	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger	53.5

Hex Nuts, Reg. & Heavy, Cold Punched:

⅜ in. and smaller	60.5
⅞ in. to 1⅛ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, All Types, Hot Galvanized:

⅜ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in. to 1½ in., incl.	46.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

⅜ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, Finshed (Incl. Slotted and Castellated):

1 in. and smaller	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller	60.5
¾ in. to 1 in., incl.	63.0
1¼ to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS

(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:

6 in. and shorter:

⅜ in. and smaller	40.0
¾, ⅞, and 1 in. diam.	22.0

Longer than 6 in.:

⅜ in. and smaller	8.0
¾, ⅞, and 1 in. diam.	+ 6.0

High Carbon, Heat Treated:

6 in. and shorter:

⅜ in. and smaller	26.0
¾, ⅞, and 1 in. diam.	3.0

Longer than 6 in.:

⅜ in. and smaller	+ 13.0
¾, ⅞, and 1 in. diam.	+ 32.0

Flat Head Capscrews:

¼ in. and smaller	+ 76.0

Setscrews, Square Head, Cup Point, Coarse Thread:

Through 1 in. diam.:	
6 in. and shorter	Net
Longer than 6 in.	+ 23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.25

⅞ in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13		27.24	23.13
1¼	13		32.25	24.41
1½	13	30.42	35.05	26.98
1¾	13	35.94	42.12	31.89
2	13	40.28	47.21	35.74
2¼	13	45.36	53.17	40.26
2½	12	49.24	57.72	43.70
2¾	12	54.23	63.57	48.13
2¾	12	58.73	68.83	52.13
3	12	62.62	73.40	55.59

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Tee Rails All 60-lb No. 2	Tee Rails Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Cuyley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.75	5.65	....	....
Huntington W.Va. C15	....	....	....	6.50
Johnstown,Pa. B2	....	....	....	(16)6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75
Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Joliet Ill. U5	6.975
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	14.75
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	15.85

SCREW SPIKES

Lebanon Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind Harbor,Ind I-2, Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Marchant.
(4) Reinforcing.
(5) 1⅜ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. Base.
(7) Chicago base 2 cols. lower.
(8) 18 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven,Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.875c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Benwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	+7.75	+22	+4.25	+17.5	+1.75	+16.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sparrows Pt., Md. B2	0.5	+26	+11.5	+35	+22	+43.5	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Alton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5	0.75	+15.5	+9.75	+26.5	+9.75	+26.5
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sharon, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingot	Rerolling Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	39.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	40.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	41.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	42.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	44.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	45.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	45.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	53.50	63.25	68.25
305	28.50	36.75	42.50	47.50	45.25	47.75	46.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	55.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	66.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	87.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	87.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	71.75	80.75	80.75
316L	....	53.50	70.00	76.50	77.00	80.75	79.50	89.25	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	88.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	54.75	65.50	65.50
330	....	....	118.75	....	132.00	138.50	135.50	149.25	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	64.75	79.25	79.25
403	....	....	28.25	....	32.00	33.75	30.00	40.25	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	32.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	30.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	31.25	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	40.25	62.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	31.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	31.75	51.75	51.75
431	....	28.75	37.75	....	42.00	44.25	41.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.80	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Strip, Carbon Base —Cold Rolled— Both Sides
Copper*	34.75	40.65

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	V-Cr Hot Work (H-13)	0.550
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr-Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.25	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.80	67.80	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% and $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)	
CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry. $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.00	8.90	10.32	....	8.70	8.65	12.33 #	15.18	8.50	8.65	9.75
Birmingham	8.18	9.45	10.46	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	53.50	9.74	10.16	13.10 #	15.26	10.03	10.07	11.97
Buffalo	8.25	9.00	11.07	55.98	8.50	8.80	11.00 #	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.10	52.43	8.54	8.92	11.06	14.86	9.18	8.93	10.21
Cleveland	8.18	9.45	10.20	52.33	8.63	9.10	....	....	9.39	9.13	10.44
Dallas	7.50	8.80	....	....	7.65	7.60	11.01	....	7.65	8.10	9.35
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.43	9.70	10.45	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.25	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.25[2]	10.30[2]	11.90[2]	57.60	8.90	8.70[2]	12.10[2]	16.10	8.50[2]	8.65[2]	10.80[2]
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96 #	....	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.23	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.64	9.99	13.25 #	15.50	9.74	9.77	11.05
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	9.25	10.32	52.69	8.70	8.65	11.95 #	15.48	8.50	8.75	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.33	8.60	10.80 #	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45‡‡	9.70	13.00	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [2]—30,000 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $137; Morrisville, Hays, Latrobe, Pa., $168; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $253; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $310.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅝ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $29-$31, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $26.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over.. F.o.b. Riverton or Camden, N. J., west of Mississippi River	10.50 / 9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ¼ in. x 1.3 in.	28.00
Annealed, 99.5% Fe	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade. 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum: Atomized, 500-lb drum, freight allowed: Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	31.00-46.70†
Bronze, 5000-lb lots	47.20-51.50†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	48.80-53.50†
Phosphor-Copper, 5000-lb lots	59.30
Copper (atomized) 5000-lb lots	39.80-48.30†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70‡
Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.30	$5.30	$5.30	$5.50
Bar Size Angles	5.05	5.05	5.05	5.42
Structural Angles	5.05	5.05	5.05	5.42
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	6.07	6.07	6.07	6.43
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.50	6.50	6.50	6.90
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.02	8.02	7.92	8.20

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	18.00-19.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom
Brazilian iron ore, 68.5%	17.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$9.50-10.00
Domestic, concentrates f.o.b. milling points	17.00-22.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included), $1.10 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$42.00-44.00
48% 2.8:1	38.00-40.00
48% no ratio	29.00-31.00
South African Transvaal	
48% no ratio	$29.00-31.00
44% no ratio	22.00-23.00
Turkish	
48% 3:1	$51.00-55.00
Domestic	
Rail nearest seller	
48% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $5.15 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.	

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa., 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245. Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c, Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35; less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, SM x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ¼" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c, less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca)—C.l. lump, bulk, 21.00c per lb of Si. Packed, c.l. 22.65c, ton lot 23.95c, less ton 24.95c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing min 98.25% min Si

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.60c per lb of alloy; ton lot, packed, 10.95c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35/40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 2¾ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c, Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per lb of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max) Ton lots 2" x D, $4 per lb of contained Cb; less ton lots, $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorous: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base); carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

Plates . . .

Plate Prices, Page 136

"Our August bookings didn't match those of May or June," says a Pittsburgh platemaker, "but hedge buying helped our bookings in May and June. Demand for all widths and gages is looking better. Construction requirements are at a peak and will continue at a high level for another month or two. We're looking for a substantial gain in shipments during September."

With plate deliveries easy and showing no immediate sign of tightening, consumers are buying hand to mouth and are making no particular effort to build up inventories.

Most producers are disappointed with the trend. If there was a gain in August, it was slight, and makers see little important pickup in order volume this month.

Structural Shapes . . .

Structural Shape Prices, Page 136

Public work continues to dominate the structural steel market. A leading project in the New York district is a 7000-ton state viaduct in the Bronx, on which the Slattery Construction Co., Maspeth, L. I., general contractor, is low bidder.

Industrial construction lags in the East and commercial awards are somewhat less heavy than they were, although considerable work is still on drawing boards.

Bridge tonnage accounts for the bulk of fabricated structural steel estimating in New England. Most shops fabricating bridges book larger individual tonnages, and competition is unabated. Higher cost plain material is not being included in most estimates.

Commercial and industrial building requirements in the area are low, and most district public work is in the form of schools, which frequently take more reinforcing steel than structurals.

Numerous composite I-beam bridge structures are being let in New England at 15.00 cents per pound, including erecting. Some shops are shading this price on bridges.

In the Midwest, plates and shapes are readily available for shipment, but demand for both products is reported slowly improving.

Pacific Northwest fabricators anticipate a slow fourth quarter because no major projects are developing.

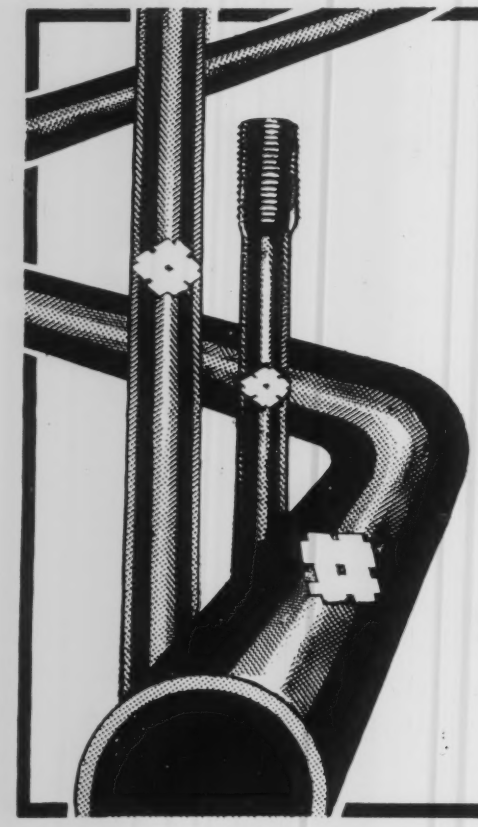
Reinforcing Bars . . .

Reinforcing Bar Prices, Page 136

While the volume of business in concrete reinforcing bars and welded fabric compares favorably with that of a year ago, distribution is uneven in New England—largely because of the price factor.

The mesh situation: Building supply houses are operating on narrow margins, and some distributors are practically out of the market. Contractors are holding estimates, frequently 12.00 to 13.00 cents for bars in place, but they are buying at lower levels.

The Texas Highway Department has followed up its cancellation of a regulation barring the use of foreign steel in road building projects. Its new order specifies that only domestic steel will be accepted in projects financed solely with state funds.



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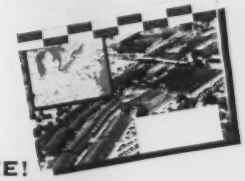

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By Albert Portevin

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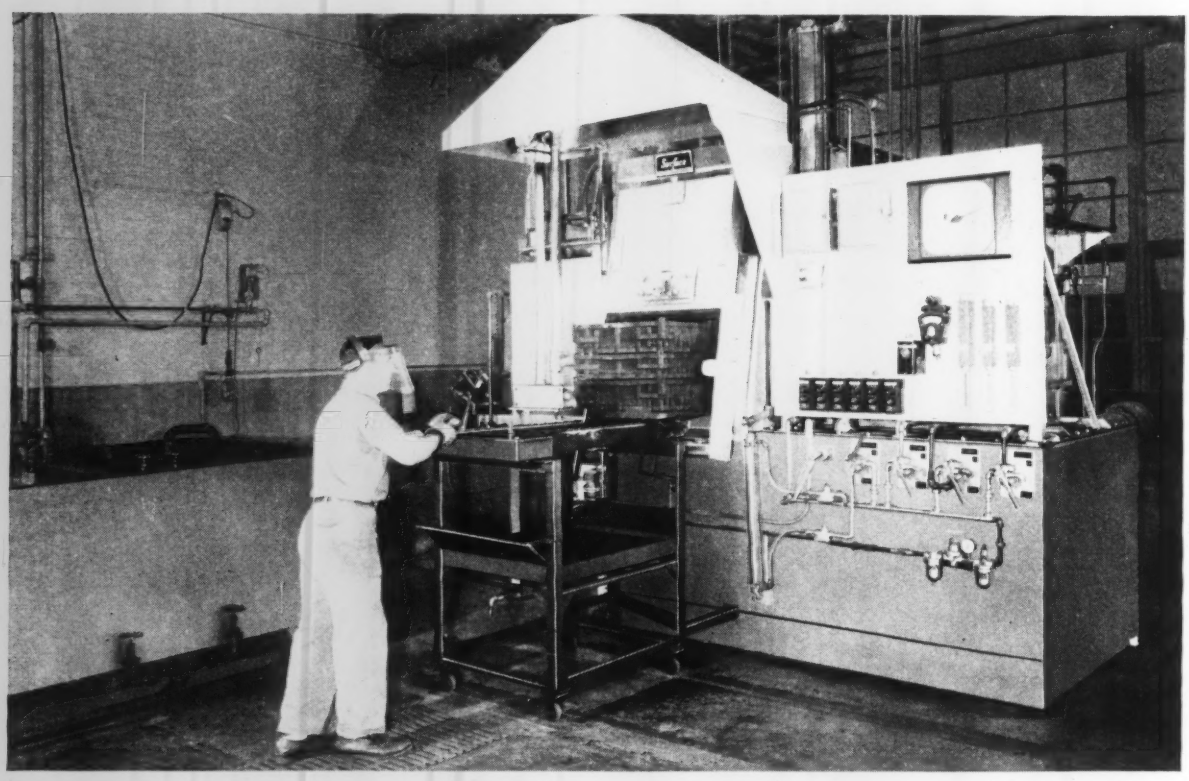

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Month Ago $42.00
Year Ago $51.83
Aug. Avg. $41.58

Scrap Price Index Still Rising

STEEL' composite rises another $1 a ton to $42.67, but tone of market is easier with mills generally holding back orders pending clarification of business outlook

Scrap Prices, Page 148

Chicago — The local market is showing additional strength despite small mill purchases. One important mill has reaffirmed its price of $47 for September purchases on No. 1 heavy melting of industrial origin. Giving the market an upward push also was the payment of $51, delivered, for No. 1 industrial bundles offered by a local auto body plant. A third bullish influence is the continuous rise in the steelmaking rate, estimated at 76 per cent of capacity last week. The rate has climbed 15.5 points in the last seven weeks and is equal to that in the week ended Dec. 22.

Pittsburgh—Dealers are marking time, hoping higher steelmaking operations will bring major consumers back into the market. Brokers paid $46.75-$47 for Fisher Body Div.'s factory bundles, about $2 less than last month. Despite the reduction, they'll have a hard time unloading the scrap at a profit. Few consumers will offer $51 for the material, the minimum price that would cover freight and commission charges. Prices of most grades are unchanged, or slightly lower. Quotations on stainless scrap are higher, reflecting short supplies.

Philadelphia—Major open hearth grades are up another $1 a ton from the level quoted last week. No. 1 heavy melting, No. 1 busheling, and No. 1 bundles are holding at $40, delivered, No. 2 melting at $36, and electric furnace bundles at $41. All other grades are unchanged.

New York—The local market is steady, with supply and demand in fair balance. Brokers' buying prices are unchanged.

Cleveland—The market is marking time, pending the closing of railroad lists. Prices are steady, and brokers anticipate continued steadiness in most grades. The foundries are doing a little more buying, but volume is considerably below what it was at this time a year ago. Steel mill buying is at a standstill but is expected to develop over the next week.

Youngstown — More signs of a weakening market are noted here. Brokers are finding it easier to pick up material in carload lots at $1 or so under what they paid recently. No. 2 scrap, as such, is not moving, but some regraded tonnage has been moved.

Detroit—Auto lists closed $1.50 to $2 a ton below last month's prices, driving broker and dealer quotations down again. No orders were placed early last week, but it was expected local mills might buy nominal tonnages. Almost all scrap moving into the mills has been industrial material, or off the docks. Dealers are pessimistic and see no upward change for some time. The possibility of an auto strike leads to two avenues of speculation. Some dealers think a close-down would result in more dealer speculation and drive prices up. Others feel that if a strike comes, mills won't be selling steel, and with scrap inventories already high, prices will continue to decline.

Buffalo — A leading scrap consumer has placed orders for secondary grades for September delivery at August prices. The mill paid $30 for No. 2 heavy melting and $28 for No. 2 bundles.

The market for No. 1 heavy melting is unchanged at $34-$35, but that price is nominal. Other grades are also unchanged, but industrial lists closed the month a shade higher, reflecting a slightly firmer tone in the better grades.

St. Louis—The local market is steady. No immediate change is anticipated. Post-Labor Day developments have yet to be reflected.

Cincinnati—Scrap is firm. Area mills are paying the same prices they were a month ago for No. 1 grades. But the No. 2 grades have slipped $1 a ton. Brokers are quoting No. 1 heavy melting at $38.50-$39.50 and No. 2 heavy melting at $32.50-$33.50.

Houston — Brokers are covering September commitments to the Houston mill in normal fashion. Some Texas centers are shipping scrap to Mexican border points where prices have moved up to $44 for No. 1 heavy melting. Country and industrial material is coming out in moderate amounts.

Gulf coast exporters are still out of the market. In New Orleans, scrap originally bought for export is moving to an inland mill. In the Houston area, a 45-day mill order placed in mid-August is providing the chief market activity.

Birmingham — There is little activity in the local market. A few electric furnaces are taking special grades at above market prices. Most larger consumers filled their needs early in August and are still receiving shipments. Brokers don't agree on the immediate outlook. Some

(*Please turn to Page* 153)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Sept. 3, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Sept. 3	$42.67
Aug. 27	41.67
Aug. Avg.	41.58
Sept. 1957	47.73
Sept. 1953	36.95

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	42.00-43.00
No. 2 heavy melting	*34.00-35.00*
No. 1 dealer bundles	42.00-43.00
No. 2 bundles	*30.00-31.00*
No. 1 busheling	42.00-43.00
No. 1 factory bundles	*47.00-48.00*
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals:	
2 ft and under	47.00-48.00
3 ft lengths	46.00-47.00
Heavy turnings	41.00-42.00
Punchings & plate scrap	*48.00-49.00*
Electric furnace bundles	*48.00-49.00*

Cast Iron Grades

No. 1 cupola	43.00-44.00
Stove plate	41.00-42.00
Unstripped motor blocks	23.00-24.00
Clean auto cast	39.00-40.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	49.00-50.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Random rails	54.00-55.00
Railroad specialties	*50.00-51.00*
Angles, splice bars	*50.00-51.00*
Rails, rerolling	*60.00-61.00*

Stainless Steel Scrap

18-8 bundles & solids	*220.00-225.00*
18-8 turnings	115.00-120.00
430 bundles & solids	*120.00-125.00*
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt, indus.	*46.00-47.00*
No. 1 hvy melt, dealer	*44.00-45.00*
No. 2 heavy melting	37.00-38.00
No. 1 factory bundles	*50.00-51.00*
No. 1 dealer bundles	*44.00-45.00*
No. 2 bundles	*31.00-32.00*
No. 1 busheling, indus.	*46.00-47.00*
No. 1 busheling, dealer	*44.00-45.00*
Machine shop turnings	*22.00-23.00*
Mixed borings, turnings	*24.00-25.00*
Short shovel turnings	*24.00-25.00*
Cast iron borings	*24.00-25.00*
Cut structurals, 3 ft.	*49.00-50.00*
Punchings & plate scrap	*50.00-51.00*

Cast Iron Grades

No. 1 cupola	*46.00-47.00*
Stove plate	*44.00-45.00*
Unstripped motor blocks	*39.00-40.00*
Clean auto cast	*52.00-53.00*
Drop broken machinery	*52.00-53.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*49.00-50.00*
R.R. malleable	57.00-58.00
Rails, 2 ft and under	60.00-61.00
Rails, 18 in. and under	61.00-62.00
Angles, splice bars	*56.00-57.00*
Axles	*69.00-70.00*
Rails, rerolling	64.00-65.00

Stainless Steel Scrap

18-8 bundles & solids	*210.00-215.00*
18-8 turnings	*110.00-115.00*
430 bundles & solids	*110.00-115.00*
430 turnings	*65.00-70.00*

YOUNGSTOWN

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	30.00-31.00†
No. 1 busheling	43.00-44.00
No. 1 bundles	43.00-44.00
No. 2 bundles	30.00-31.00†
Machine shop turnings	15.00-16.00†
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	45.00-46.00
Electric furnace bundles	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00†

CLEVELAND

No. 1 heavy melting	39.50-40.50
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	46.00-47.00
No. 1 bundles	39.50-40.50
No. 2 bundles	28.00-29.00
No. 1 busheling	39.50-40.50
Machine shop turnings	14.00-15.00
Short shovel turnings	19.00-20.00
Mixed borings, turnings	19.00-20.00
Cast iron borings	19.00-20.00
Cut foundry steel	41.00-42.00
Cut structurals, plates 2 ft and under	49.00-50.00
Low phos. punchings & plate	41.00-42.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	40.50-41.50

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	37.00-38.00†
Heavy breakable cast.	36.00-37.00
Stove plate	46.00-47.00
Unstripped motor blocks	32.00-33.00
Brake shoes	36.00-37.00
Clean auto cast	49.00-50.00
Burnt cast	33.00-34.00
Drop broken machinery	49.00-50.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut tires	43.00-44.00
Angles, splice bars	50.00-51.00
Rails, rerolling	56.00-57.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	185.00-190.00
18-8 turnings	100.00-105.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	*38.00*
No. 2 heavy melting	*36.00*
No. 1 bundles	*40.00*
No. 2 bundles	*29.00*
No. 1 busheling	*40.00*
Machine shop turnings	20.00†
Short shovel turnings	22.00†

Cast Iron Grades

No. 1 cupola	47.00
Charging box cast	39.00
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	48.00
Stove plate	*45.00*

Railroad Scrap

No. 1 R.R. heavy melt.	44.00
Rails, 18 in. and under	52.00
Rails, random lengths	*47.50*
Rails, rerolling	61.00
Angles, splice bars	47.00

BIRMINGHAM

No. 1 heavy melting	35.00-36.00*
No. 2 heavy melting	30.00-31.00*
No. 1 bundles	35.00-36.00*
No. 2 bundles	24.00-25.00
No. 1 busheling	35.00-36.00*
Cast iron borings	12.00-13.00
Machine shop turnings	24.00-25.00
Short shovel turnings	25.00-26.00
Bars, crops and plates	46.00-47.00
Structurals & plates	*44.00-45.00*
Electric furnace bundles	39.00-40.00
Electric furnace:	
2 ft and under	38.00-39.00
3 ft and under	37.00-38.00

Cast Iron Grades

No. 1 cupola	*53.00-54.00*
Stove plate	*53.00-54.00*
Unstripped motor blocks	42.00-43.00
Charging box cast	22.00-23.00
No. 1 wheels	39.00-40.00

Railroad Scrap

No. 1 R.R. heavy melt.	39.00-40.00
Rails, 18 in. and under	51.00-52.00
Rails, rerolling	59.00-60.00
Rails, random lengths	46.00-47.00
Angles, splice bars	47.00-48.00

PHILADELPHIA

No. 1 heavy melting	*40.00*
No. 2 heavy melting	*36.00*
No. 1 bundles	*40.00*
No. 2 bundles	25.00†
No. 1 busheling	*40.00*
Electric furnace bundles	*41.00*
Mixed borings, turnings	20.00-21.00†
Short shovel turnings	23.00-24.00
Machine shop turnings	20.00-21.00
Heavy turnings	34.00
Structurals & plate	42.00-44.00
Couplers, springs, wheels	45.50
Rail crops, 2 ft & under	57.00-58.00

Cast Iron Grades

No. 1 cupola	40.00
Heavy breakable cast.	42.00
Malleable	58.00-59.00
Drop broken machinery	48.00-50.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	29.00
No. 1 bundles	32.00-33.00
No. 2 bundles	19.00-20.00
Machine shop turnings	10.00-11.00
Mixed borings, turnings	11.00-12.00
Short shovel turnings	13.00-14.00
Low phos. (structurals & plates)	35.00-36.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	28.00-29.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	175.00-180.00
18-8 borings, turnings	*70.00-75.00*
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	*70.00-75.00*

BUFFALO

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	34.00-35.00
No. 2 bundles	27.00-28.00
No. 1 busheling	34.00-35.00
Mixed borings, turnings	17.00-18.00
Machine shop turnings	14.00-15.00
Short shovel turnings	19.00-20.00
Cast iron borings	17.00-18.00
Low phos. structurals and plate, 5 ft and under	39.00-40.00
2 ft and under	43.00-44.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	40.00-41.00
No. 1 machinery	44.00-45.00

Railroad Scrap

Rails, random lengths	53.00-54.00
Rails, 3 ft and under	59.00-60.00
Railroad specialties	43.00-44.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	38.50-39.50
No. 2 heavy melting	*32.50-33.50*
No. 1 bundles	38.50-39.50
No. 2 bundles	*25.00-26.00*
No. 1 busheling	38.50-39.50
Machine shop turnings	18.00-19.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings	20.00-21.00
Cast iron borings	17.00-18.00
Low phos. 18 in.	42.00-43.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Heavy breakable cast	34.00-35.00
Charging box cast	34.00-35.00
Drop broken machinery	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	42.00-43.00
Rails, 18 in. and under	53.00-54.00
Rails, random lengths	43.00-44.00

HOUSTON

(Brokers' buying prices; f.o.b. cars‡)

No. 1 heavy melting	38.00
No. 2 heavy melting	33.00
No. 2 bundles	24.00
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	42.00

Cast Iron Grades

No. 1 cupola	45.00
Heavy breakable	30.00†
Foundry malleable	38.00
Unstripped motor blocks	36.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*27.00*
No. 2 heavy melting	22.50
No. 1 bundles	*27.00*
No. 2 bundles	21.00
No. 1 busheling	*27.00*
Machine shop turnings	7.00-8.00
Short shovel turnings	8.00-9.00
No. 1 cast	*31.00-32.00*
Mixed cupola cast	*31.00*
No. 1 machinery cast	36.00-38.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*32.50-33.50*
No. 2 heavy melting	*23.00-24.00*
No. 1 bundles	*33.00-34.00*
No. 2 bundles	*20.00-21.00*
No. 1 busheling	*31.50-32.50*
Machine shop turnings	*9.00-10.00*
Mixed borings, turnings	*10.00-11.00*
Short shovel turnings	*11.00-12.00*
Punchings & plate	*32.00-33.00*

Cast Iron Grades

No. 1 cupola	*36.00-37.00*
Stove plate	*27.00-28.00*
Charging box cast	*27.00-28.00*
Heavy breakable	*26.00-27.00*
Unstripped motor blocks	*16.00-17.00*
Clean auto cast	*37.00-38.00*

SEATTLE

No. 1 heavy melting	30.00†
No. 2 heavy melting	28.00†
No. 1 bundles	22.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast.	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	20.00
Machine shop turnings	11.00
Shoveling turnings	11.00
Cast iron borings	11.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	41.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast.	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory: Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

*Brokers' buying price.
†Nominal.
‡F.o.b. Hamilton, Ont.

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Metalmen Meet in London

Delegates from 20 nations to discuss overproduction problems. Hopes are high but expectations low as to concrete results. Look for delay in tariff decision until after confab

Nonferrous Metal Prices, Pages 152 & 153

REPRESENTATIVES from 20 U. N. countries are meeting in London this week to discuss overproduction of lead, zinc, and copper. U. S. producers are hopeful that some good will come from the confab, but, in private, they admit that nothing concrete can be expected.

Biggest drawback is that none of the delegates has any authority to enter into an agreement that could control production. All they can do is discuss the causes of imbalance in supply and demand and set up the machinery for more study and development work.

U. S. Aim—The U. S. delegation is headed by Clarence Nichols, deputy director of the State Department's Foreign Trade Division. Capitol Hill will be represented by Robert Redwine, assistant counsel for the Senate Interior & Insular Affairs Committee. Washington sources say that industry officials have been in Washington for two or three weeks trying to get their points of view across to Commerce and State Department officials.

The president of one lead and zinc company says the producers have asked the U. S. delegation to stress two main points: 1. The urgency for new or improved uses of the three metals to increase consumption. 2. The need for cutbacks in production throughout the world to give demand a chance to catch up with supply and to stabilize prices. Washington observers feel that our delegation is going more to listen than to offer proposals.

Agenda — Today and tomorrow (Sept. 8-9) will be devoted to copper. The last three days will be turned over to the lead and zinc men. It is felt that a world study group or groups (one for each metal) may be set up to investigate and make recommendations for consideration later on.

The most U. S. producers can hope for is that these friendly discussions will help foreign producers see the necessity for cutting down production. One industry official says: "Our domestic production has been cut to the lowest point in years, and with some pickup in shipments, we are now approaching a balance. But foreign producers haven't cut back one bit, and imports are keeping us in trouble."

Howard I. Young, president of American Zinc, Lead & Smelting Co., expresses the feeling of many industry officials about the conference: "It's a good thing to get together and talk over our problems. I'm sure that our industry will cooperate in every way possible, but only Congress can make treaties and agreements."

Tariff Decision Delayed—Most observers feel that President Eisenhower will delay any decision on higher tariffs until after the conference (Sept. 15 at the earliest). One mining executive goes a step farther by predicting no action until after election day. But many industry officials feel that the President is obligated to take some action on the Tariff Commission's recommendations for higher duties. One predicts that he will boost the tariff unless foreign producers give some indication at London that they will cut back production. Another says he doesn't think there is much of a chance of the President granting any relief, large or small.

What Next? — If the President does not approve the tariff measure, look for lead and zinc men to appeal to Congress when it reconvenes. There is little sentiment for a revised Seaton Plan. One metalman terms it a dead issue. Another executive feels that there will be some pretty strong support for a sliding tariff scale. One official says the basic problem cannot be solved by simply cutting back on production to meet demand. "If domestic mines have to operate at greatly curtailed rates, costs become too high for us to make adequate profits. Some sort of artificial stimulus is needed."

It is doubtful if copper producers will ask Congress for help. The supply-demand situation in copper is much better than of the other two metals.

Copper Production To Rise

Phelps Dodge Corp., the second largest domestic producer of copper, last week increased production at its mines at Morenci and Bisbee, Ariz.

This is the second major domestic producer to raise its production sights within the last three weeks. Kennecott Copper Corp., the No. 1 producer, started to boost its output on Aug. 22.

Phelps Dodge will up its workweek at the mines from four days to five to increase its monthly output by 3500 tons. This reverses the downturn in which five curtailments cut PD's production 40 per cent.

NONFERROUS PRICE RECORD

	Sept. 3 Price	Last Change	Previous Price	Aug. Avg	July Avg	Sept., 1957 Avg
Aluminum	**24.70**	Aug. 1, 1958	24.00	24.700	24.000	26.000
Copper	26.00-26.50	Aug. 28, 1958	26.50	26.510	26.125	26.469
Lead	**10.55**	Aug. 13, 1958	10.80	10.646	10.800	13.800
Magnesium	**35.25**	Aug. 13, 1958	33.75	35.250	35.250	35.250
Nickel	**74.00**	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	95.25	Sept. 3, 1958	95.75	94.995	94.950	93.422
Zinc	**10.00**	July 1, 1957	10.50	10.000	10.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

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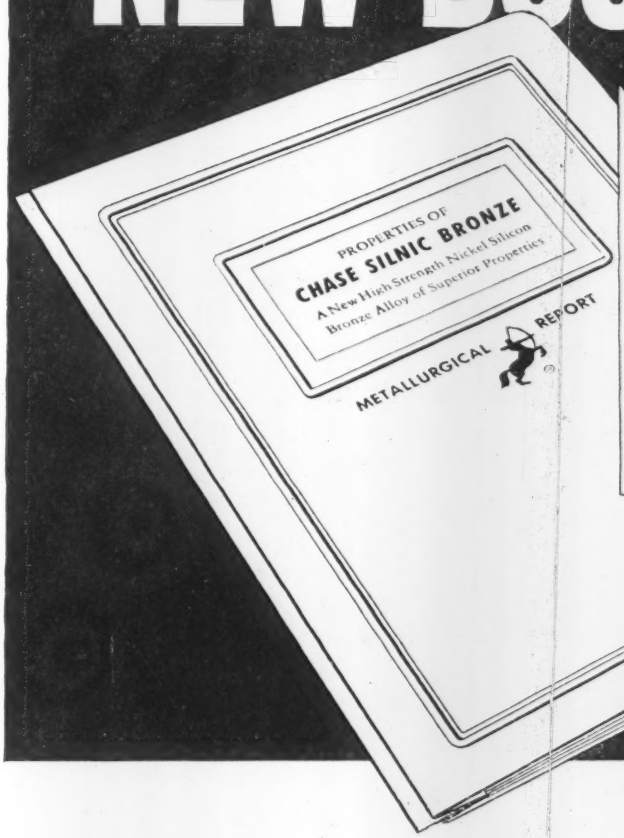

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Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.00; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50; f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97.99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 26.50 deld.; custom smelters, 26.00; lake, 26.50 deld.; fire refined, 26.25 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 10.55; chemical, 10.65; corroding, 10.65, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $240-244 per 76-lb flask.

Molybdenum: Unalloyed turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-19 per troy oz.

Platinum: $62-65 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market 88.625 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot, 95.25; prompt, 95.125.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 98.8%, carbon .reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 12.25; No. 2, 12.75; No. 5, 12.50 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.50-25.25; No. 12 foundry alloy (No. 2 grade), 21.50-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.75; grade 2, 21.50; grade 3, 20.50; grade 4, 17.75.

Brass Ingot: Red brass, No. 115, 27.00; tin bronze, No. 225, 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.845, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.825, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 31.855; l.c.l., 32.48. Weatherproof, 20,000-lb lots, 33.66, l.c.l., 34.41, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $16.25 per cwt; pipe, full coils, $16.25 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	....
0.136-0.096	43.20-48.30	....
0.126-0.103	....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	....
0.077-0.061	....	39.50-40.70
0.068-0.061	44.30-52.20	....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.60
0.012-0.011	51.80	46.70
0.011-0.0095	53.30	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.)or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	68.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.375	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ¾ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70-60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 19.25-19.75; No. 2 heavy copper and wire, 17.25-17.75; light copper, 15.25-15.75; No. 1 composition red brass, 15.50-16.00; No. 1 com-

BRASS MILL PRICES

MILL PRODUCTS a

	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes
Copper	49.63b	46.86c	....	49.82
Yellow Brass	43.57	29.28d	44.11	46.48
Low Brass, 80%	46.03	45.97	46.57	48.84
Red Brass, 85%	46.89	46.83	47.43	49.70
Com. Bronze, 90%	48.30	48.24	48.84	50.86
Manganese Bronze	51.52	45.74	56.18	....
Muntz Metal	45.95	41.76	....	....
Naval Brass	47.83	42.14	54.89	50.99
Silicon Bronze	54.37	53.56	54.41	56.29
Nickel Silver, 10%	58.82	61.15	61.15	....
Phos. Bronze, A-5%	68.59	69.09	69.09	70.27

SCRAP ALLOWANCES e (Based on copper at 26.50c)

	Clean Heavy	Rod Ends	Clean Turnings
	22.500	22.500	21.750
	17.000	16.750	15.250
	19.000	18.750	18.250
	19.750	19.500	19.000
	20.625	20.375	19.875
	15.625	15.375	14.875
	15.875	15.625	15.125
	15.625	15.375	14.875
	22.125	21.875	21.125
	22.000	21.750	11.000
	23.375	23.125	22.125

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 14.50-15.00; new brass clippings, 13.00-13.50; light brass, 9.25-9.75; heavy yellow brass 10.50-11.00; new brass rod ends, 11.00-11.50; auto radiators, unsweated, 11.50-12.00; cocks and faucets, 12.50-13.00; brass pipe, 12.50-13.00.

Lead: Heavy, 6.50-6.75; battery plates, 2.00-2.25; linotype and stereotype, 8.50-9.00; electrotype, 7.50-8.00; mixed babbitt, 9.00-9.50.

Monel: Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 3.00-3.25.

Aluminum: Old castings and sheets, 9.50-10.00; clean borings and turnings, 6.00-6.50; segregated low copper clips, 13.00-13.50; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.75-13.25; mixed high copper clips, 11.50-12.00.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.00-15.50; mixed low copper clips, 15.50-16.00; mixed high copper clips, 15.00-15.50.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 9.25-10.00; clean borings and turnings, 8.50-9.00; segregated low copper clips, 13.50-14.00; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 11.00-11.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 52.50; light scrap, 47.50; turnings and borings, 32.50.

Copper and Brass: No. 1 heavy copper and wire, 22.00; No. 2 heavy copper and wire, 21.25; light copper, 19.00; refinery brass (60% copper) per dry copper content, 20.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 22.00; No. 2 heavy copper and wire, 20.75; light copper, 18.50; No. 1 composition borings, 18.00; No. 1 composition solids, 18.50; heavy yellow brass solids, 12.75; yellow brass turnings, 11.75; radiators, 14.50.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.55.
Copper: Flat-rolled, 43.03; oval, 14.50, 5000-10,000 lb; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.
Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.
Tin: Bar or slab, less than 200 lb, 114.50; 200-499 lb, 113.00; 500-999 lb, 112.50; 1000 lb or more, 112.00.
Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.55 per lb in 100-lb drums.
Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.
Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.
Copper Sulphate: 100-1900 lb, 14.05; 2000-5900 lb, 12.05; 6000-11,900 lb, 11.80; 12,000-22,900 lb, 11.55; 23,000 lb or more, 11.05.
Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.
Nickel Sulphate: 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.
Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.
Sodium Stannate: Less than 100 lb, 76.30; 100-600 lb, 67.20; 700-1900 lb, 64.50; 2000-9900 lb, 62.60; 10,000 lb or more, 61.30.
Stannous Chloride (anhydrous): 25 lb, 151.40; 100 lb, 146.50; 400 lb, 144.00; 800-19,900 lb, 103.20; 20,000 lb or more, 97.10.
Stannous Sulphate: Less than 50 lb, 136.70; 50 lb, 106.70; 100-1900 lb, 104.70; 2000 lb or more, 102.70.
Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 147*)

predict higher prices for some items this month; others think prices will hold. Still others think there will be an advance in October.

Los Angeles—District mills continue to withhold purchases. Some people expect price declines by the middle of the month.

Seattle—Mill prices for September are still uncertain. Some dealers look for higher prices, others for lower offers. At the moment, the market is steady. Nominally, No. 1 is $30 and No. 2 $28. Only small sales are reported, with yard receipts limited. No export interest is noted.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

600 tons, public school No. 134, Manhattan, New York, through Caristo Construction Co., general contractor, to Lehigh Structural Steel Co., Allentown, Pa.

485 tons, 4-span plate girder bridge, Farmington River, Bloomfield-East Granby, Conn., to City Iron Works, Wethersfield, Conn.; Brunalli Construction Co., Southington, Conn., general contractor.

415 tons, high school, Antrin, Pa., to Goetz Welding Co., Harrisburg, Pa.

350 tons, structurals and bars, regional high school, Redding, Conn., to Leake & Nelson Co., Bridgeport, Conn. (structurals) and Fireproof Products Inc., New York (reinforcing bars); John Zandonella Inc., Bridgeport, general contractor.

240 tons, two state projects, Cockeysville, Md., to High Welding Co., Lancaster, Pa.

230 tons, state highway bridge, Exeter-Stratham, N. H., to A. O. Wilson Structural Co., Cambridge, Mass.; E. D. Swett Inc., Pembroke, N. H., general contractor; 115 tons, steel piles, to Bethlehem Steel Co., Bethlehem, Pa.; and 40 tons, concrete reinforcing bars to Bancroft & Martin Rolling Mills Co., South Portland, Maine.

154 tons, addition and fire station, Seattle-Tacoma International Airport, to Isaacson Iron Works, Seattle; James I. Barnes Construction Co., Seattle, general contractor.

120 tons, state highway bridge, Waterville, Maine, to Bancroft & Martin Rolling Mills Co., South Portland, Maine; Cianchette Bros. Inc., Pittsfield, Maine, general contractor; 45 tons, concrete reinforcing bars to same shop.

105 tons, Copper River bridges, Alaska, to the Bethlehem Pacific Coast Steel Corp., Seattle; Pacific-Alaska Contractors, Tacoma, Wash., general contractor.

100 tons, Nike storage projects, Alaska, to several fabricators; Peter Kiewit Sons Co., Seattle, general contractor.

100 tons, Oregon State highway bridge, Lincoln County, to Independent Iron Works, Los Angeles.

100 tons, addition, hospital, Harrisburg, Pa., to Dauphin Steel Co., that city.

STRUCTURAL STEEL PENDING

14,000 tons, estimated, Washington State freeway, University District crossing, Seattle; bids probably in December.

7000 tons, Bruckner Boulevard, state viaduct, Bronx, New York, Slattery Construction Co., Maspeth, L. I., low on general contract.

7000 tons, state bridge work, Philadelphia County, Pa., Buckley & Co., Philadelphia, low on the general contract.

1100 tons, state bridge work, Montgomery County, Pa., James Morrissey, Philadelphia, low on the general contract.

806 tons, Montana State bridge, at Superior; bids postponed; rebid date unstated.

800 tons, renovating section of the Major Deegan Highway, Bronx, New York, Rusciano & Del Dalso, Pelham, N. Y., joint bidders on general contract.

200 tons, gates and equipment, Eagle Gorge project; bids in to U. S. Engineer, Seattle.

Unstated, 642-ft Oregon State undercrossing, Multnomah County; bids to Salem, Oreg., Sept. 9.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1400 tons, building, etc., Great Falls, Mont., air base, to Bethlehem Pacific Coast Steel Corp., Seattle; Sound Construction & Engineering Co., Seattle, general contractor.

770 tons, state highway structures, including five bridges, Holyoke-South Hadley, Mass., to L. R. Foster Co., West Springfield, Mass.; Golden & O'Brien, Indian Orchard, Mass., general contractor; 620 tons, fabricated structural steel, to Mount Vernon Bridge Co., Mt. Vernon, Ohio.

500 tons, estimated, cargo pier and facilities, Maryland Port Authority, Baltimore, to Bethlehem Steel Co., Bethlehem, Pa.; McLean Construction Co., Baltimore, general contractor.

250 tons, Nike storage facilities, Alaska, to Soule Steel Co., Seattle; Peter Kiewit Sons Co., Seattle, general contractor.

170 tons, maintenance shop, Ft. Richardson, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Pattl-MacDonald Construction Co., St. Louis, and Morrison-Knudsen Inc., Seattle, general contractor, low at $862,518 to the U. S. Engineer.

175 tons, 4-span plate girder bridge, Farmington River, Bloomfield-East Granby, Conn., to Scherer Steel Co., East Hartford, Conn.; Brunalli Construction Co., Southington, Conn., general contractor.

140 tons, plate girder bridge and approaches, Canterbury-Boscawen, N. H., to Bethlehem Steel Co., Bethlehem, Pa.; Halloran Construction Co., Providence, R. I., general contractor; 445 tons, steel piles, to Bethlehem Steel Co.

100 tons, Tropic Motel, Seattle, to Northwest Steel Rolling Mills Inc., Seattle.

100 tons, West Seattle sewage plant, to Bethlehem Pacific Coast Steel Corp., Seattle; G. R. Leischner Co., Seattle, general contractor.

100 tons, science building, Holy Cross College, Worcester, Mass., to United States Supply Div., U. S. Steel Corp., Boston; Granger Construction Co., Worcester, general contractor.

100 tons, state highway bridge, Cummington-Windsor, Mass., to Scherer Steel Co., East

CLASSIFIED

FOR SALE

National Counting and Weighing Scale, Industrial Dormant, Built-In-Type. Platform 4 ft x 5 ft. Upper and lower beams graduated by ½ lb. to 200 lbs. Extra weights to weigh up to 6000 lbs. Can be seen in operation. Cost new $2000.00. Sell for $500.00.

Endicott Forging & Mfg. Co., Inc.
Endicott, New York

Help Wanted

BLAST FURNACE
COKE OVEN
SUPERVISORS

Well established corporation operating blast furnaces and coke ovens in Alabama needs technically trained and experienced supervisors capable of qualifying in short time for high-level management positions at both blast furnace and coke oven plants. Submit full resume. All replies strictly confidential. Reply Box 687, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

SUPERVISING METALLURGIST — Experienced practical research, development, trouble-shooting. Knows high temperature, conventional and exotic metals. M.S., 33. Half decade supervisory experience. Reply Box 688, STEEL, Penton Bldg., Cleveland 13, Ohio.

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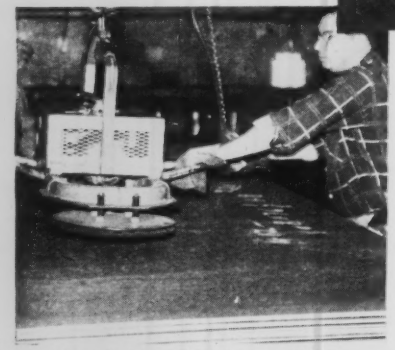
is TODAY'S safer and more economical way to handle

SHEETS and BLANKS*

Two views of 4-cup VAC-U-MATION Lifter showing 2600 lb. steel plate in horizontal and vertical positions. In operation at a West Coast aluminum plant.



2-cup VAC-U-MATION Lifter at CATERPILLAR TRACTOR, Joliet, Illinois plant handling 500 lb. sheets on squaring press.

VAC-U-MATION shortens man-hours—cuts handling costs—pays for itself F-A-S-T. For example, a big electrical manufacturer says VAC-U-MATION has cut a three-man hazardous chore of unstacking and cutting metal sheets weighing up to 400 lbs. each to a safe, efficient one-man operation.

VAC-U-MATION is growing up. Why not look into it for your sheet and blank handling?

*STEEL, ALUMINUM, GLASS, WOOD, etc.

4581C

14" diameter waffle-faced cup with neoprene rubber.

Molded on steel backing plate equipped with 4 mounting holes. Other designs for 6", 8" and 10" diameters available.

20" square waffle-faced cup with neoprene rubber.

Molded on aluminum backing plate equipped with 4 mounting holes.

Rectangular cups with neoprene rubber molded on steel backing plate. Sizes 2½" x 8¾" and 3½" x 16".

E. J. LITTELL MACHINE CO.

VAC-U-MATION DIVISION

4189 Ravenswood Avenue, Chicago 13, Illinois

District Offices: Detroit and Cleveland

Write for NEW Catalog!

Hartford, Conn.; J. F. White Contracting Co., Westwood, Mass., general contractor.

53 tons, Seattle-Tacoma airport project, to Bethlehem Pacific Coast Steel Corp., Seattle; James I. Barnes Construction Co., Seattle, general contractor.

78 tons, clinic at Wenatchee, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; Hainsworth Construction Co., general contractor.

REINFORCING BARS PENDING

625 tons, also 85 tons of shapes, approaches, chutes, tunnels, gates, etc., Prineville Dam, Crooked River, Oreg.; Keystone Construction Co., Inc., and associates, Prineville, low at $2,614,943 to the Bureau of Reclamation.

170 tons, Montana State traffic interchange, Toole County; bids to Helena, Mont., Sept. 12.

155 tons, Washington State highway projects, Pierce and Grant Counties; general contracts respectively to Woodworth & Co., Tacoma, Wash., low at $287,169, and Algona Construction Co., Ltd., Moses Lake, Adams County, low at $59,423.

150 tons, two Washington State girder bridges, Adams County; bids to Olympia, Wash., Sept. 3.

126 tons, nine Montana State bridges, Cascade County, total length 850 ft; bids to Helena, Mont., Sept. 12.

70 tons, Washington State road project, Skagit County; bids to Olympia, Wash., Sept. 3.

PIPE . . .

CAST IRON PIPE PLACED

250 tons, Seattle improvement project, to U. S. Pipe & Foundry Co., Seattle.

102 tons, 4 and 6 in. for King County District No. 61, to the U. S. Pipe & Foundry Co., Seattle.

100 tons, 8 and 10 in. for King County District No. 75, Seattle; to the U. S. Pipe & Foundry Co., Seattle.

87 tons, 4 and 6 in. for Ashland, Oreg., to the U. S. Pipe & Foundry Co.

CAST IRON PIPE PENDING

180 tons, 7650 feet of various sizes; bids in to Burt Manning, clerk, Monroe, Wash.

RAILS, CARS . . .

RAILROAD CARS PLACED

Union Pacific, 100 caboose cars to its Omaha shops.

Missouri-Kansas-Texas, 20 covered hopper cars, to the General American Transportation Co., Chicago.

National Railways of Mexico, 200 flatcars to the American Car & Foundry Div., ACF Industries Inc., New York, and 135 seventy-ton dropend gondolas to the Pullman-Standard Car Mfg. Co., Chicago.

Cuts Capacitator Prices

Fansteel Metallurgical Corp., North Chicago, Ill., has announced an across-the-line reduction of prices of its Type S-T-A solid tantalum capacitators amounting to about 35 per cent.

The new base price of Series 100 S-T-A capacitators, in lots of 1000 or more, is now $1.20 each, compared with the previous $1.90. Prices of larger case sizes are reduced in proportion. The newly announced 50 and 60 volt S-T-A capacitators are about 20 per cent higher in price, being $1.45 each for units of the Series 100 in lots of 1000 or more.

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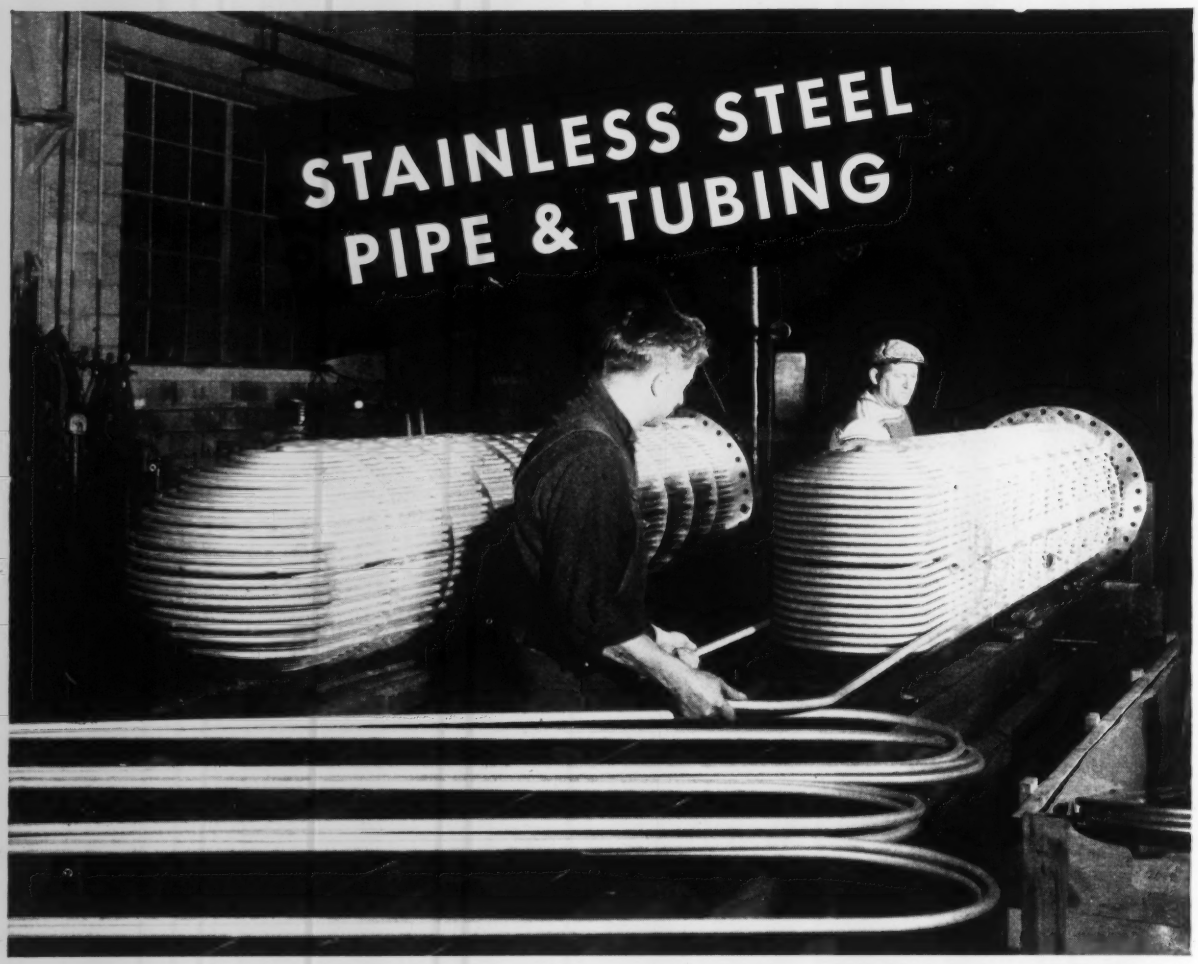
TO FIND THE MAN YOU NEED . . .

Place an advertisement in the "Help Wanted" columns of STEEL's classified pages. Your advertisement will reach the qualified men you need, because STEEL is addressed to highly-trained men in all phases of metalworking

STEEL
The Metalworking Weekly



ODDS AGAINST LEAKERS · · · 3400 TO 1

The percentage is all in your favor when you use Damascus tubing. Customer claims entered for settlement over a 5-year period amounted to only 3/100 of 1% of all tubing shipped. A remarkable record—one that can save you time and money. On new equipment or when you are re-tubing, always specify Damascus. Available in stainless for normal corrosive service . . . and in reactive metals and super-alloys for special applications.

U-TUBES OR SPECIAL BENDING — Damascus is also able to supply U-tubes fabricated to your specifications, as well as precision coiling and custom bending. For additional information, write or call.

COMPLETE INFORMATION on RARE and REACTIVE METALS PIPE and TUBING

New 44-page handbook contains data on applications, heat treatment, corrosion resistance, chemical and physical analysis, mechanical properties of Zirconium, Zircaloy 2, Zircaloy 3; Titanium, grades 40, 55, and 70; Precipitation Hardening Steels, A-286, 17-7-PH, 15-7-MO; Hastelloys A, B, C, F, and X.

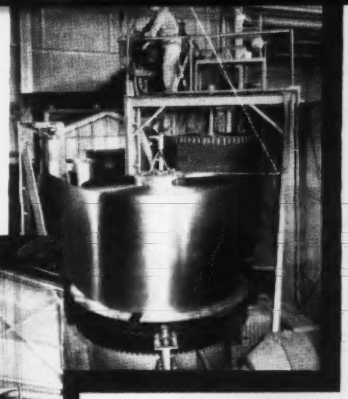
AMERICAN STEEL WAREHOUSE ASS'N

DAMASCUS TUBE COMPANY

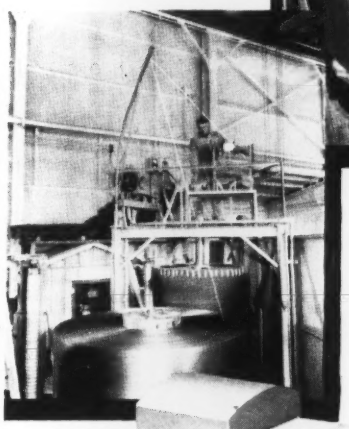
STAINLESS STEEL TUBING AND PIPE

GREENVILLE, PENNSYLVANIA

FORMED STEEL TUBE INSTITUTE

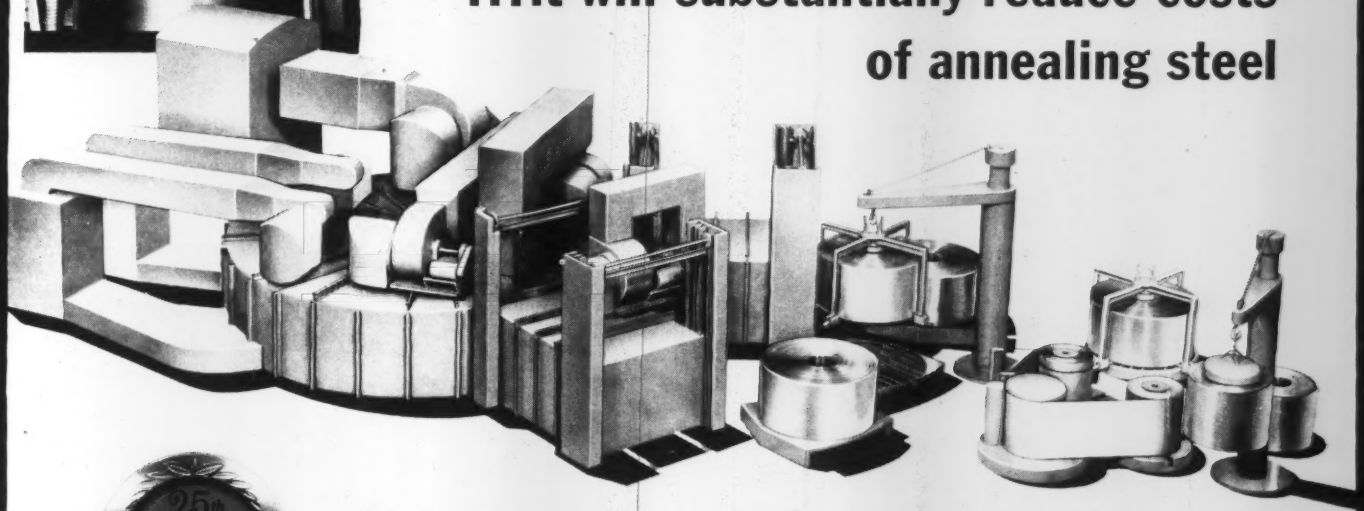


Right — Tight coil being opened. Note separator string being threaded into the coil.
Below — Separator string being removed from coil.



here it is...

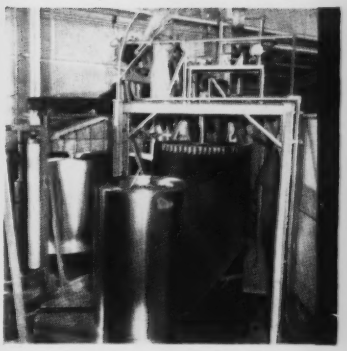
the revolutionary opened coil annealer, designed by Lee Wilson ...it will substantially reduce costs of annealing steel



25th Lee Wilson ANNEALER ENGINEERING COMPANY CLEVELAND

Methods of opening and handling opened coils, heart of New System

Lee Wilson engineers have developed a method for opening and handling opened coils that makes it possible to expose from 200 to 1000 times the area to heat. This means a faster, more uniform anneal. The new system, further, drastically reduces the expensive process inventory required in the annealing operation. There are many other important advantages to this revolutionary new system. Be sure you have all the facts. Write today for your copy of the Opened Coil Annealer brochure that explains the system in detail.

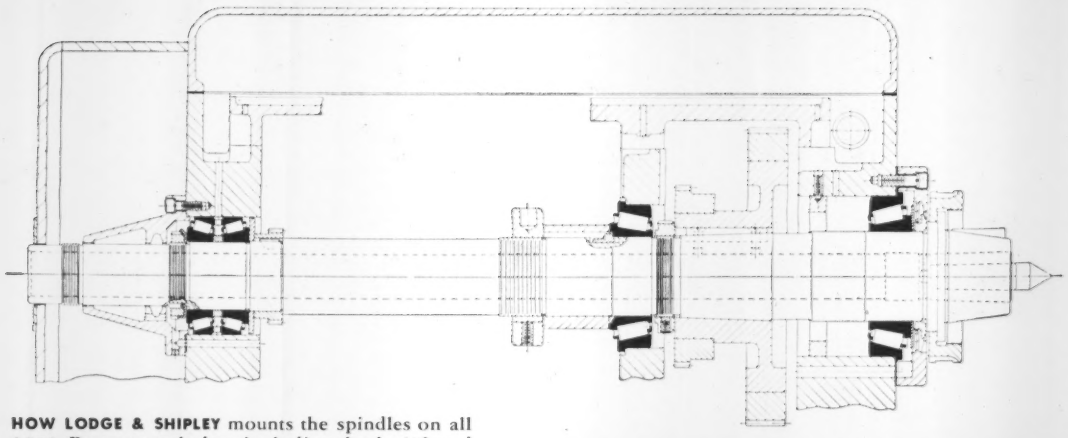


Opened coil being rewound into a tight coil after annealing.

Lee Wilson* ENGINEERING COMPANY, INC.
20005 WEST LAKE ROAD • CLEVELAND 16, OHIO
HIGH PRODUCTION ANNEALING SYSTEMS
MAKE THE BEST METALS BETTER

2505

* ORIGINATORS AND LEADING PRODUCERS OF OPENED COIL AND SINGLE STACK FURNACES



HOW LODGE & SHIPLEY mounts the spindles on all 2013 Powerturn lathes including both 45° and 90° Copymatics on Timken bearings to get extra rigidity, maintain accuracy, reduce maintenance.

New type lathe ups production 200%, saves users an estimated $8,000 a year

...one secret—TIMKEN® bearings on the spindle

"Production increases as high as 200%"..."Overall savings estimated at $8,000 a year"—read user reports about the new 2013 Powerturn 90° Copymatic Lathe. One important reason for such exceptional results is that Lodge & Shipley mounts the spindle on Timken® tapered roller bearings. Timken bearings give it the vital extra rigidity and hold runout to the minimum needed for tracer accuracy.

How spindle is held rigid. Timken bearings hold the spindle in positive alignment. They take *both* radial and thrust loads in any combination, because of their tapered design. And because of full line contact between rollers and races, Timken bearings have extra load-carrying capacity.

Why heavy shocks are absorbed. Case-carburization of Timken bearings' rollers and races gives them hard, wear-resistant surfaces and tough, shock-resistant cores.

How friction is virtually eliminated. Timken bearings are geometrically designed to roll true. And they're precision-made to live up to their design. They run smoother—last longer.

We even make our own electric furnace fine alloy steel, for extra quality control. We're America's only bearing maker that does. To get all these advantages, always specify bearings trade-marked "TIMKEN". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN® BEARING EQUIPPED

This symbol on a product means its bearings are the best.

See us at the **1958 IRON & STEEL EXPOSITION**
PUBLIC AUDITORIUM · CLEVELAND, OHIO
SEPT. 23-26, BOOTHS 134, 135, 136, 137

TIMKEN®
TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD